THE MARINE REVIEW

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THE HARBOR OF HONOLULU, HAWAII.

BY H. P. WOOD, SECRETARY, HONOLULU CHAMBER OF COMMERCE.

The harbor of Honolulu, Hawaii, has been well described as a depression in the coral reef bordering the Island of Oahu with a narrow channel through the reef connecting the harbor proper with the open sea.

The entrance channel has a width of 400 ft. and a depth of 35 ft. The inner harbor has a depth of 35 ft. and a general width of 900 ft. which will soon be increased to 1,200 ft. with a uniform depth of 35 ft.

The territorial government practically controls all of the wharves concerning which, the following data has been kindly supplied for this article by Mr. C. S. Holloway, superintendent of public works:—

Statement showing in detail the wharves controlled by the Territory of Hawaii, in the harbor of Honolulu, together with the floor areas, shed area where wharves are covered, and depth of water below mean tide in the adjoining slips.

Wharf.	Area, sq. ft.	Shed Area, sq. ft.	Depth of Water, ft.
Hackfeld	80,950	28,800	32
Queen St. Bulkhead	37,000	34,800	32
Emmes	8,568	12,000	24
Sorenson	24,436	.....	24
Nuuanu	32,760	8,000	24
Brewers	34,200	19,600	24
Oceanic	19,780	39,820	30
Fort Street	5,900	4,690	34
Kekuanaoa	16,120	.....	24
Old Kinau	13,539	.....	24-34
Govt. Wharf No. 2.	73,200	.....	34
Govt. Wharf No. 1 (proposed)	40,800	.....	34
Channel Wharf ...	48,000	32,000	34

Regarding construction of additional wharves, the superintendent of public works states that three new slips are now (Jan. 1, 1907), being completed, each 200 ft. in width, having a dredged depth of 34 ft. below meantide line. The government wharves between these slips will be 120 ft. in width and 610 ft. in length; the construction to be of the most permanent character, thus affording ample and convenient wharfage facilities for a very large commerce.

The pilot service of the port of Honolulu is excellent, vessels are met and anchored in all kinds of weather.

The schedule of charges is as follows:

Sailing vessels, 5 cents per ton registered tonnage.

Coasting vessels under enrollment, 5 cents per ton, pilotage not compulsory.

Vessels with a register and foreign vessels pay half pilotage when not employing a pilot.

Mail steamers, $50 in and the same out.

Transient steamers, $75 in and the same out.

Men-of-war, $1 per foot draught in and the same out.

Transports, same as men-of-war.

Wharfage, per day, 2 cents per ton; harbor master's fee, $6.

RATES FOR TOWAGE.

Vessels under 200 tons, $30.
Vessels between 200 and 300 tons, $40.
Vessels between 500 and 800 tons, $45.
Vessels between 800 and 1,000 tons, $50.
Vessels between 1,000 and 1,200 tons, $60.
Vessels between 1,200 and 1,400 tons, $75.
Over and above 1,400 tons, 5 cents per registered ton additional. Towing outside of pilot limits by agreement.

MOVES IN THE HARBOR:

Up to 1,000 tons, $10.
1,000 to 1,400 tons, $15.
1,400 to 2,000 tons, $20.
2,000 to 3,000 tons, $25.

UNITED STATES CUSTOMS FEES CHARGED TO VESSELS OF 100 NET TONS OR UPWARDS WHEN ENTERING OR CLEARING TO OR FROM FOREIGN PORTS.

Foreign entry	$2.50
Foreign clearance	2.50
Surveyor's fee (paid on entry).....	3.00
Receiving manifest (from another dist.)	2.00
Permit to proceed coastwise (foreign vessels only)	2.00
Post entry	2.00
Bill of health	.20
Official certificate	.20

Vessels carrying immigrants pay a tax of two dollars ($2.00), on each foreigner landed at this port.

Navigators will also be interested in knowing that there is safe anchorage and good holding ground off the harbor.

There is also an excellent launch service affording convenient shore communication.

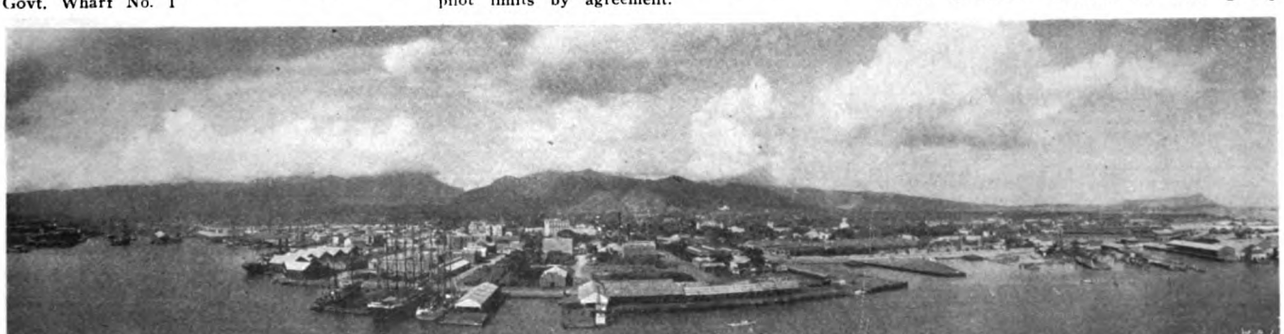
Full lines of ship's supplies are carried by Honolulu merchants, prices are reasonable, deliveries being made alongside vessels.

The water supply is good, cheap and easily obtained.

Ballast may be readily secured at reasonable rates.

Having cable connection with all parts of the world, makes Honolulu a convenient port of call for sailing orders.

The different islands of the group



Photograph by] GENERAL VIEW OF THE PORT OF HONOLULU. [*Rice & Perkins, Honolulu.*

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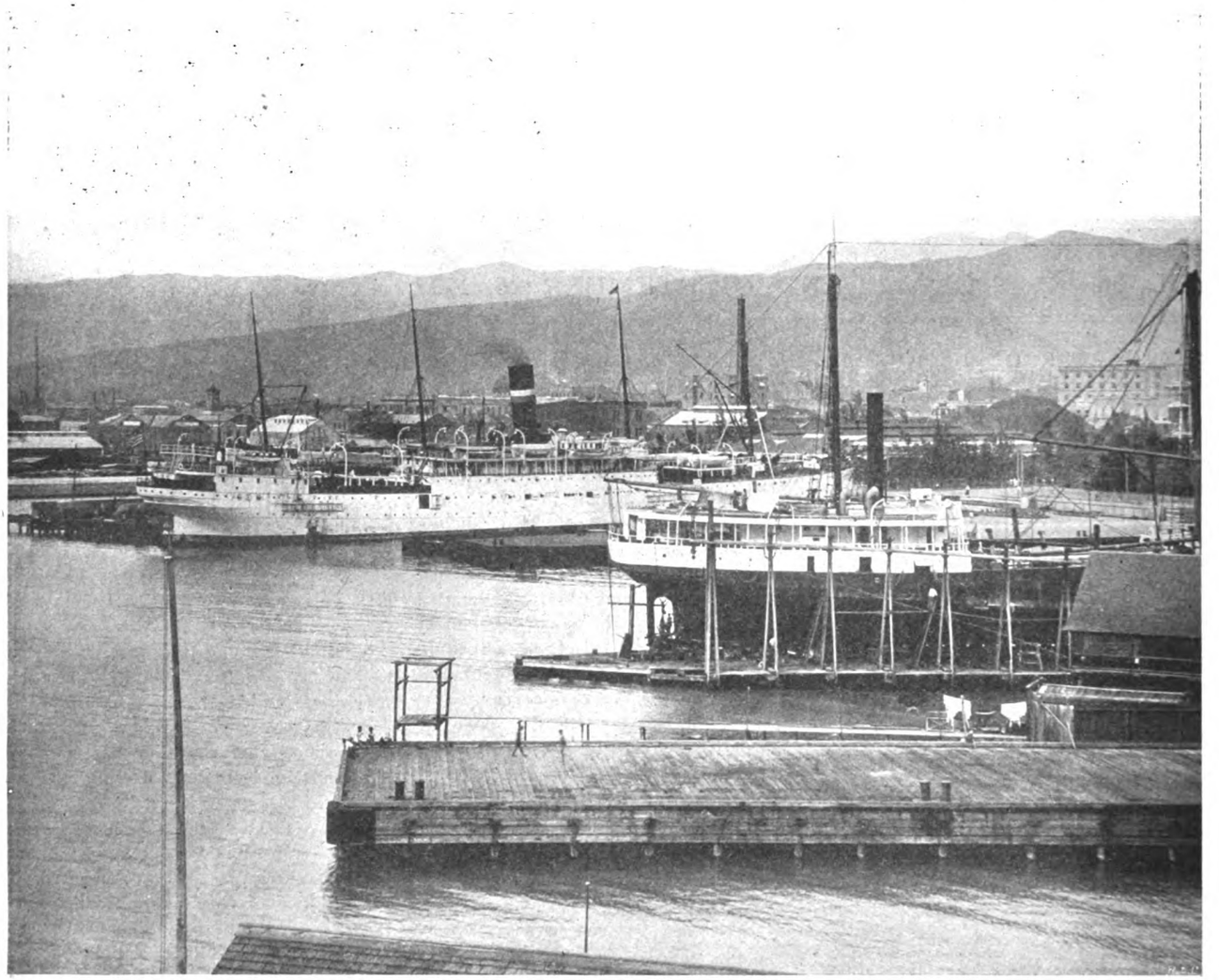
are connected by an effective system of wireless telegraphy.

Large supplies of coal always on hand and for sale at reasonable prices.

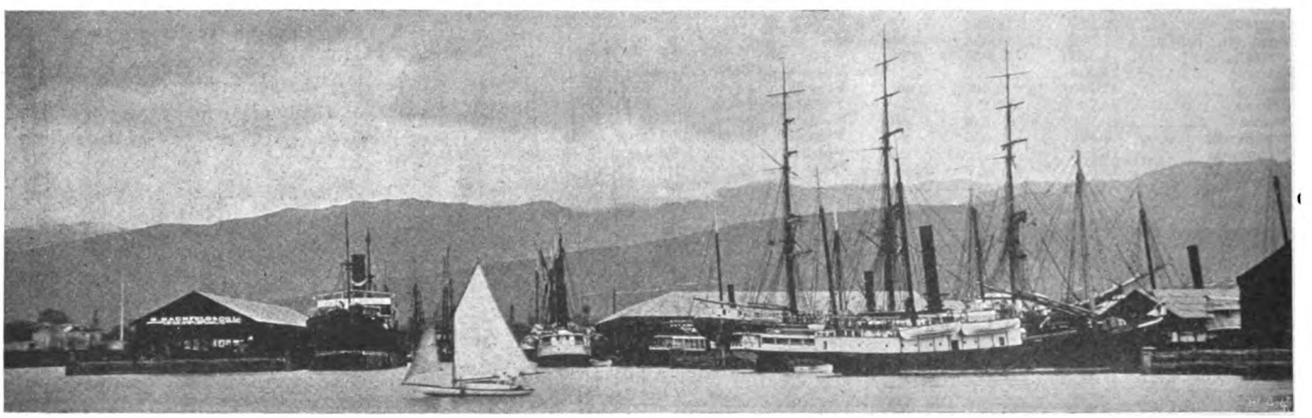
The situation of Honolulu with reference to the commerce of the Pacific is such that the building of a modern dry dock, capable of properly caring for the largest steamships afloat, is a matter of only a short time. The Honolulu Chamber of Commerce recently passed strong resolutions favoring such an undertaking.

At present there is a marine railway capable of handling vessels up to 1,500 tons in light ballast.

Honolulu has regular steamship connection with Japan, China, Australia, New Zealand, Samoa, Tahiti, Vancouver, British Columbia, and with the cities of Seattle and San Francisco on the Pacific coast of the United States, as well as with Salina Cruz, the western terminus of the



THE MARINE RAILWAY SLIP, HONOLULU.



SOME OF THE INTER-ISLAND STEAM NAVIGATION CO.'S FLEET.

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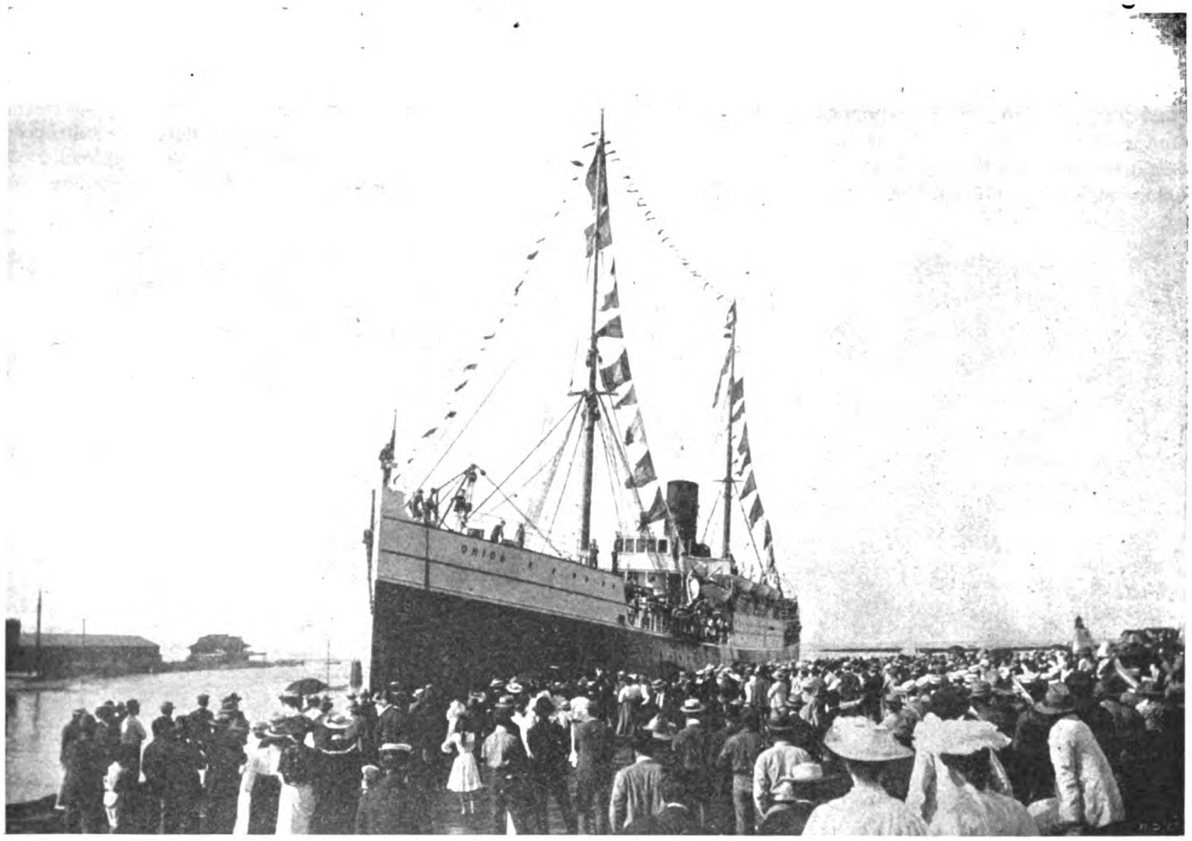

NOT A DAY TRIP! THE S. S. OHIO ARRIVING AT HONOLULU WITH 250 EXCURSIONISTS FROM SOUTHERN CALIFORNIA, OVER 2,000 MILES DISTANT.

Tehuantepec Railway, which bids fair to become one of the world's great trade routes.

The Hawaiian Islands lie between 18°—54″ and 22°—14″ north; 154°—48″ and 160°—13″ west.

The standard time is 10 hours and 30 minutes slower than Greenwich time.

TABLE OF DISTANCES FOR FULL POWERED STEAM VESSELS FROM HONOLULU TO THE LEADING PORTS OF THE PACIFIC.

	MILES
Acapulco	3,310
Apia	2,240
Auckland	3.850
Callao	5.147
Cape Horn	6,488
Guam	3,337
Guaymas	2,696
Hong Kong	4,961
Levuka	2,736
Manila	4,803
Melbourne	4,940
Pago Pago	2,263
Paita	4,777
Panama	4,665
Petropavlovsk	2,782
Portland	2,318
Punta Arenas	6,379
Sandakan	4,980
San Diego	2,280
San Francisco	2,100
San Pedro	2,232
Seattle	2,401
Sitka	2,395
Sydney	4,424
Tahiti	2,389
Ualan	2,445
Unalaska	2,016
Valparaiso	5,916
Victoria	2,343
Vladivostock	3,721
Wellington	4,163
Yokohama	3,445

Honolulu, in the Hawaiian language, signifies "the sheltered" and is well named, being entirely exempt from severe storms during all seasons of the year. It is indeed a harbor of certain refuge, enjoying a climate that is remarkable for its equability.

During the year 1905 the highest wind velocity, recorded at the office of the U. S. Weather Bureau, Honolulu, was 36 miles; the average hourly velocity being 8.5 miles from the northeast.

As to the healthfulness of the islands, Robert M. O'Reilly, surgeon general of the United States army, in his last annual report says, "Hawaii ranks next after Alaska as the most healthful country in which American troops are serving."

In addition to an efficient and ably conducted Territorial Board of Health,

Photograph by] WAIKIKI BEACH, HONOLULU'S BATHING RESORT. [*Rice & Perkins, Honolulu.*

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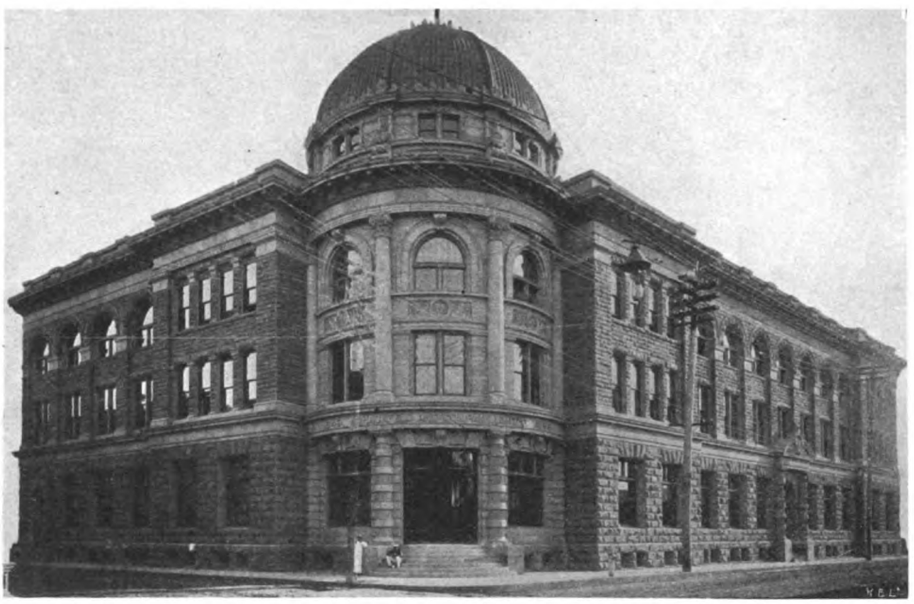
constantly on the watch to combat and prevent the spread of disease in every form, the port of Honolulu is guarded by a completely equipped quarantine station, conducted by the U. S. Government with buildings and appurtenances sufficient for the proper handling at one time of 30 sick persons, 100 first-cabin passengers, 300 second-cabin passengers, 600 immigrants and 1,600 troops. The buildings are new and are kept in a state of perfect order and preparedness. The hospital and detention facilities are first class. The station is also equipped with a bacteriological laboratory, dispensary, crematory, electric light plant, steam laundry, telephone system, etc.

As a precaution against the introduction of yellow fever, arrangements have been made whereby a representative of the U. S. Quarantine Service will accompany every steamer sailing from Salina Cruz—the Pacific port of the Tehuantepec Railway—to Honolulu.

Following are a few interesting facts about the city of Honolulu: Population, 45,000; 125 miles well paved streets; 24 miles electric car lines; two electric light plants; two iron foundries and machine shops, capable of making extended ship's repairs; six woodwork and planing mills; efficient fire department and police force; three daily newspapers; five commercial banks; splendid hotels; good boarding houses; excellent restaurants; large importing and commission houses.

The following named countries have consular representatives stationed at Honolulu:—Austria-Hungary, Belgium, China, Denmark, France, Germany, Great Britain, Italy, Japan, Korea, Mexico, Netherlands, Norway, Peru, Portugal, Russia, Spain, Sweden.



THE OFFICES OF MESSRS. H. HACKFIELD & CO., AGENTS FOR THE PACIFIC MAIL STEAMSHIP CO. AND THE AMERICAN-HAWAIIAN STEAMSHIP CO.

THE BANK OF HAWAII, HONOLULU.

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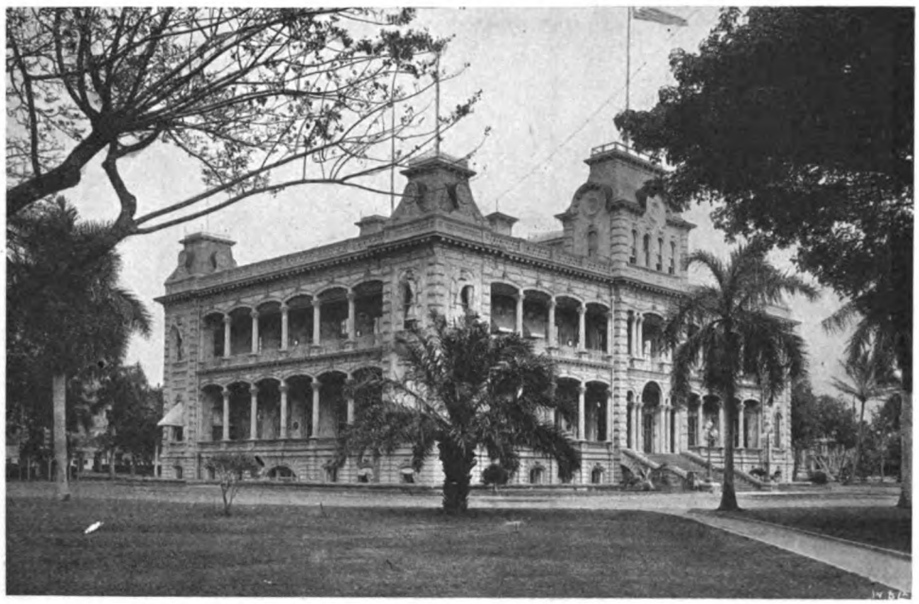
ITEMS OF GENERAL INTEREST.

Prominent vessel managers on the lakes are urging the steamboat inspectors to enforce the rules which prohibit unnecessary whistling, such as complimentary saluting, which they regard as a dangerous proceeding. This violation of the law occurs mainly in Detroit and St. Clair rivers.

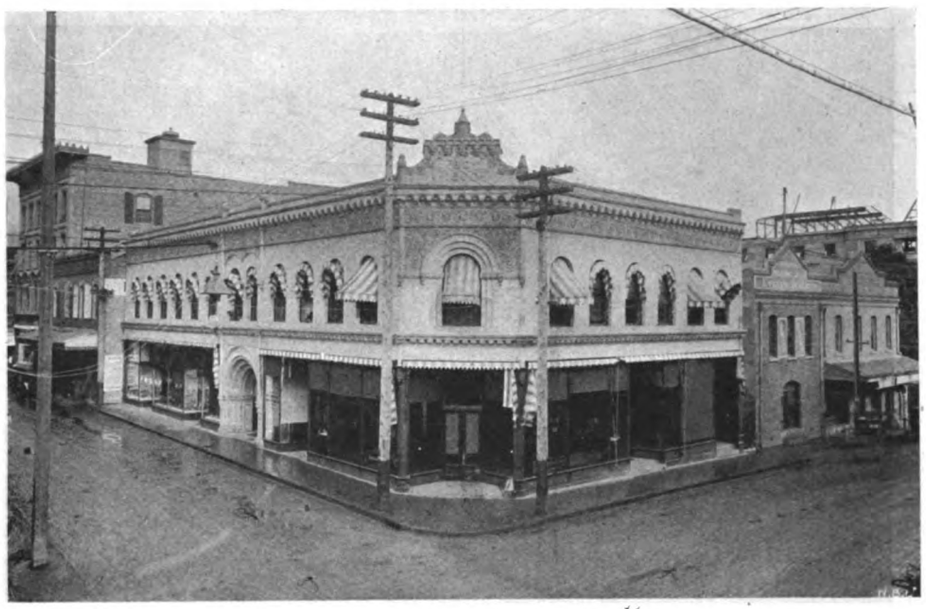
The tug Excelsior and lighter Newman were sent to the steamer Mariska, aground at the head of Stag Island. The steamer Corsica will assist in releasing the stranded boat. There is a strong current around the Mariska and the Corsica and Excelsior will hold the steamer up while she is being lightered by the Newman.

The Galveston Steamship Co. of Christiana has bound itself to maintain regular and direct connections between Norway and the Gulf of Mexico, in consideration of which the company has been granted a subsidy amounting to $26,800 by the Norwegian government. For the present the schedule is to consist of one sailing every six weeks in either direction from Christiana and Galveston, although it is intended to institute monthly sailings later. The service was inaugurated Sept. 1 by the sailing of the Kristiana from Christiana for Galveston and Mexican ports.

The Life Saving Benevolent Association, New York, has awarded its gold medal to Capt. Robert C. Warr, commander of the Cunard steamer Carmania for rescuing a fisherman from a dory during a severe gale. The rescue was made early on the morning of June 10 last. The sea was exceedingly rough and the lookout sighted a dory with a man helpless from exposure and exhaustion lying in it. The condition of the sea made it impossible to launch a boat and Capt. Warr set about the difficult task of maneuvering the giant liner alongside the little craft. In this he was finally successful and one of the Carmania's crew sprang into the dory and adjusted a rope around the famished fisherman's body, and



EXECUTIVE BUILDING, HONOLULU.



THE FIRST NATIONAL BANK, HONOLULU.

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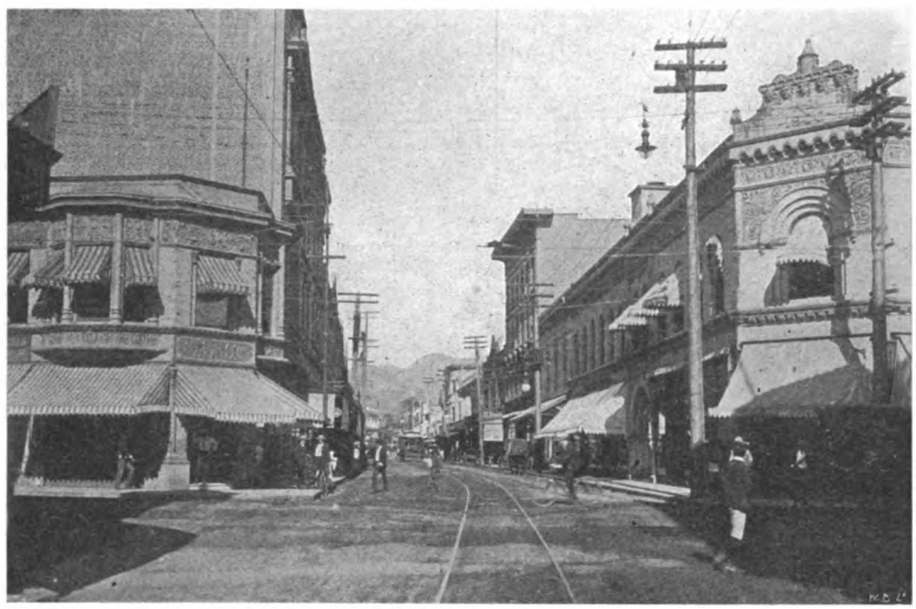
both rescued and rescuer were hauled aboard together. The fisherman was Louis Vollet, a member of the crew of the French fishing schooner Minosa.

The navy department has authorized the sale at auction of the famous old war vessel Saratoga, and her name will hereafter be borne by the present cruiser New York. One of the new "Dreadnaughts" is to be called after the Empire State and the renaming of the cruiser was thus made necessary. The old Saratoga made a name for herself in the Mexican war and in the suppression of slave traffic. Among her commanders have been such famous men as Farragut, Shubrick and Tatnall. She was built at Portsmouth in 1842 and since then has been repaired so often that it is doubtful if much of the original remains. She was named after Perry's flagship at the battle of Lake Erie and Commodore Perry once sailed in her to the African coast, where she was sent to suppress the slave traffic.

Capt. I. P. Freeman, of the Savannah-Baltimore liner Allegheny, which burned at sea July 17, was recently found guilty of the charge of negligence and unskillfulness in the navigation of his vessel. The verdict was rendered by Supervising Inspector of Steam Vessels Oast after conducting the examination. Owing to the fact that this was Captain Freeman's first accident and that there was no loss of life his license was suspended for only ninety days, from Aug. 14.

The new Hamburg-American line steamer President Grant, sister ship of the President Lincoln, sailed on her maiden voyage to New York Sept. 14, with a full complement of passengers. The President Grant was built by Harland & Wolff, Belfast, is 616 ft. long, 68 ft. beam, and is fitted with twin screws. Her total passenger capacity is slightly less than 5,000 people.



FORT STREET, HONOLULU.

THE ROYAL HAWAIIAN HOTEL, HONOLULU.

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The Pacific Mail liner Acapulco, which sank at her dock at San Francisco while taking on bunker coal, was floated Sept. 12 and the work of removing her cargo commenced. She will be dry docked at once for survey and repairs.

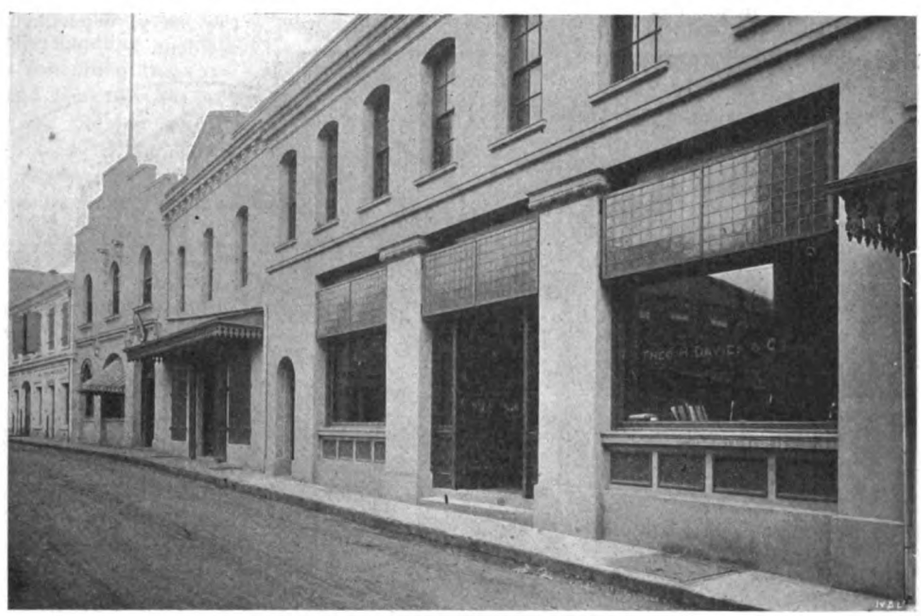
The new steamer Princeton, built by the New York Ship Building Co., has sleeping accommodations for 2,000 persons.

The Atlantic Transport Line, operating steamships from New York, Philadelphia and Baltimore, to ports in Great Britain, has announced that it will add Antwerp to its list of sailing ports and the Mobile will sail from there Oct. 3, direct to Baltimore. The Atlantic Transport Co. is a subsidiary of the International Mercantile Marine Co.

The strike of the Southern Pacific dock workers at Galveston, Tex., was brought to an abrupt termination last week. The company was importing negroes to fill the places of the strikers, which moved the citizens' committee to solicit the settlement of the strike, the result being that the strikers returned to work at the old wages, 30 to 45 cents an hour, a few minor concessions being made by the company.

Much elation is felt by Louisiana shipping interests over the opening Oct. 15 of the new Atchafalaya Bay channel, a new outlet to the Gulf of Mexico. The lumber and sugar interests are to be especially benefited by the new waterway and in fact are largely responsible for its construc-

OFFICE OF MESSRS. IRWIN & CO., AGENTS FOR THE OCEANIC STEAMSHIP CO.



OFFICE OF MESSRS. T. H. DAVIES & CO., AGENTS FOR THE CANADIAN-AUSTRALIAN STEAMSHIP CO.

Camden, N. J., for the People's Hudson River day line between New York and Albany, was successfully launched last week. The Princeton, which will go into commission in 1908, is larger than her sister ships the C. W. Morse and Adirondack, and

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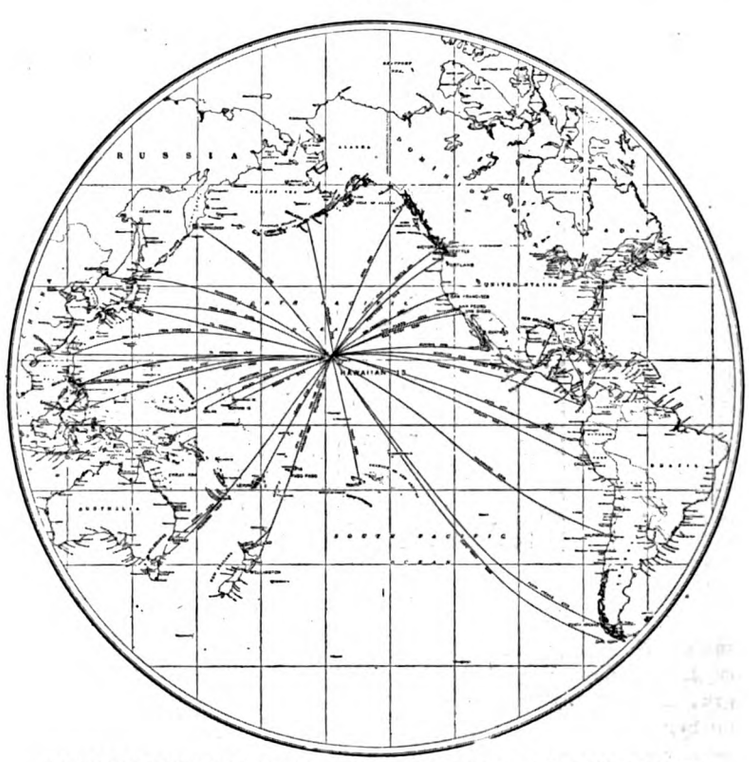
THE OFFICES OF THE INTER-ISLAND STEAM NAVIGATION CO. AT HONOLULU.

tion. The canal was built by a private corporation, the Atchafalaya Bay Ship Channel Co., with a capitalization of $250,000, and it is expected to do much to relieve the congestion of railroad traffic in this district, where there has been much delay from that source.

The report of what is known as the "Turret Board", appointed following the explosion on the battleship Georgia, has been partially made public by Secretary of the Navy Metcalf. The report recommends the safer installation of electrical apparatus, removal of combustible material, greater protection from fire and improvement in the gas ejector system, which it is believed will prevent the occurrence of flarebacks, one of which on the Georgia was responsible for the loss of the lives of eleven of her crew. These changes as recommended have been practically embodied in the plans for the 12-in. turrets of the new battleships Delaware and New York, but it is proposed to bring the turrets of all types of the ships now in commission up to the same efficiency, giving structural separation of the guns from the magazines.

The recent accident to the battleship Alabama, which is described as a crack in the port high pressure cylinder, will not interfere with the sailing of that vessel with Rear Admiral Evan's fleet to the Pacific in December, according to an announcement at the navy department following the accident.

THE MEMORIAL TO CAPTAIN COOK AT HONOLULU.



HONOLULU OCCUPIES A MOST CENTRAL POSITION IN THE NORTH PACIFIC, AS THIS MAP SHOWS.

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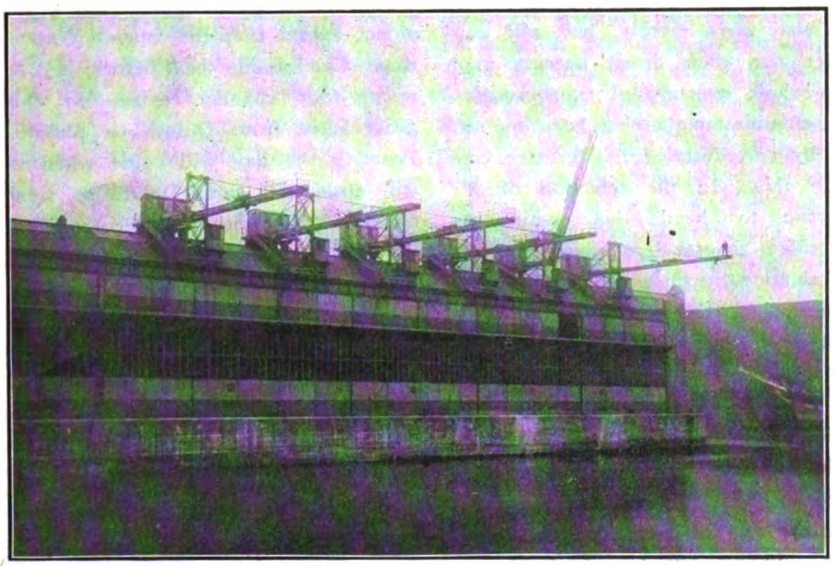
ELECTRIC TRANSPORTERS AT THE MERSEY DOCKS.

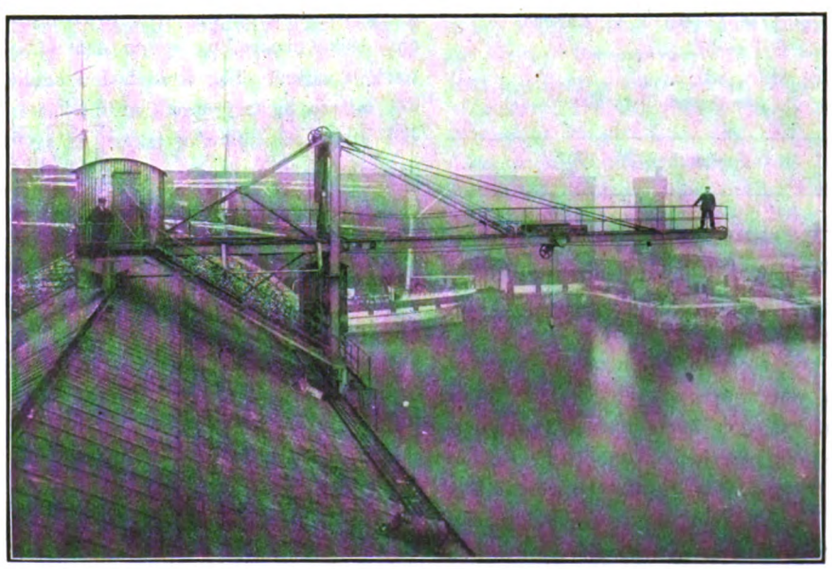
Messrs. Applebys, Ltd., Glasgow, have supplied six electric transporters to the Mersey Docks and Harbor Board for service at the Canada dock



ELECTRIC TRANSPORTER ROOF CRANES ON LIVERPOOL DOCKS OF 1½ TONS CAPACITY.

used by the large Atlantic liners, and our illustrations supplied to us by Messrs. Appleby, Ltd., show one of them. The transporters have been designed for the rapid handling of general cargo and to run along the shed roofs, the front and back of the carriage being borne by running wheels moving on rails placed at the eaves and ridge of the dock side span of the roof. The machines are capable of handling a working load of 1½ tons at a maximum outreach of 47 ft. from the center of the lower rail, variable to a minimum outreach of 3 ft. 6 in., the vertical lifting range being 76 ft. Each transporter has four motions, namely, lifting, rocking, traveling, and hinging up the jib. The lifting and rocking gears are connected together by a coil friction clutch, and driven by one motor, the gearing being so arranged that when the clutch is in gear the rocking motion can be performed either backward or forward, in accordance with the direction in which the controller handle is moved, but the two motions cannot be combined. The arrangement is such that, in unloading a vessel, when the load has been lifted to the required height, a motion of a lever will cause it to travel inwards without having to stop the motor; and when a load is being traveled outwards, it can be lowered by a motion of the lever directly the required distance out is attained. The traveling gear is worked by an independent motor fixed on the lower sill and driven by means of spurs, bevels, and cross shaft, one running wheel on the lower and one on the upper track. The jib lifting gear is also arranged on the lower sill, and consists of a worm and spur-driven double-barrel winch. The jib is lifted on four parts steel wire rope, winding two parts; an automatic retaining brake being also provided. The above motions can be performed at the following speeds: Lifting 1½ tons, 250 ft. per minute; lifting no load, 700 ft. per minute; rocking 1½ tons, 300 ft. per minute; rocking, no load, 400 ft. per minute; traveling, no load, 60 ft. per minute; jib hinging in two minutes.

The motors are of the enclosed water-tight, multi-polar type, series wound for a direct current supply at 460 volts. The lifting and rocking motion is capable of developing 32 brake H. P. at 500 R. P. M.; the traveling motor of 5 brake H. P. at 600 R. P. M., and the jib lifting motor of 3 brake H. P. at 1,000 R. P. M. The controllers are of the tramway type, totally enclosed and fitted with magnetic blow-outs. The resistances are of the grid type, connected to the controllers by means of insulated cables. The controllers, resistances, switchboard, and levers are arranged in the driver's cabin in a convenient position. The cabin itself is also arranged so as to give the driver an uninterrupted view of his work, whatever may be the position of the hook.



ELECTRIC TRANSPORTER CRANES ON LIVERPOOL DOCKS OF 1½ TONS CAPACITY.

NEW LINE TO SOUTH AMERICA.

It is authoritatively announced that within six weeks a new line of steamers is to be in operation between New York and the west coast of South America, in which Valparaiso, Iquique, Callao and others of the larger ports along the route will be made ports of call. This service is to be inaugurated by Barber & Co., steamship agents, Produce Exchange, New York, in addition to the other lines now operated by them to South America. There will be about half a dozen boats and it is the company's belief that the growing business with this country will amply warrant the venture.

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September 26, 1907.

WATERWAYS COMMISSION.

The present tour of the Inland Waterways Commission is the beginning of what is probably destined to be the most comprehensive study of the waterways of the United States that has ever been made. This commission, of which Hon. T. E. Burton is chairman, is a most representative one, embracing both legislative and executive ends of the government as well as men distinguished in civil life, and is empowered to deal with the subject in its broadest aspect. The work, as mapped out by President Roosevelt, is upon general lines, but it seems to us that no executive has manifested such wide comprehension of the relation of waterways to industrial welfare as has President Roosevelt. He points out very clearly how the question of transportation involves the interest of every private citizen and how the waterways of the country are inseparably linked with the railways. The Inland Waterways Commission will not confine its investigation, as its name might imply, to waterways merely, but will consider also their direct bearing upon the whole question of transportation. No commission that has been appointed by an executive has greater cope than this. In the selection of Mr. Burton to head this commission, President Roosevelt exhibited fine discrimination, because no man is better qualified for this office than he. Mr. Burton has, for a period of twenty years, made waterways the chief study of his life and he is far and away the ablest man in the country upon this subject. It is not necessary to discuss in this article his limitations in relation to certain phases of it—notably shipping—but to admit his unquestioned competence in the development of the country's physical resources in its rivers and harbors.

This commission left Lorain on Saturday last on the steamer Thomas F. Cole, making the trip to Duluth and then proceeding down the Mississippi valley. The commission could not fail to be impressed with what it saw along the chain of lakes. It saw, passing as it were in review, a commerce that will total 60,000,000 tons during the present year and which could not possibly exist at all were it not for this chain of waterways which has been so generously developed by the general government. It is not generally known but it is a fact that the commerce of the great lakes traverses an artificial waterway greater than the proposed cut through the Isthmus of Panama for the Panama canal, a distance of 45 miles. Consider what a mighty feeder to a score of railways this country's commerce is. It would be impossible, as stated, for this commerce to exist were it not for this chain of waterways. The railways could not possibly haul, at commercial figures, this enormous quantity of bulk freight over such a great distance. So economically, indeed, has it been transported along the chain of lakes that the total sum the government has ever expended on the improvement of the waterways of the lakes has been saved each year to the people of the United States in the consequent reduction of the freight rates. This is the one great object lesson that the Inland Waterways Commission has before it. A twenty-foot channel exists on the great lakes from Duluth to Buffalo. Possibly the day will come when it will also exist from Duluth to New Orleans. When that is accomplished the United States will have the finest system of inland waterways in the world. The possibility of this improvement of the Mississippi is one of the points that the commission will consider. When the rivers and lakes are working in unison to provide cheaper transportation the blessing to the people will be immeasurable.

BLUE BOOK OF AMERICAN SHIPPING.

The MARINE REVIEW announces that it is prepared to deliver, carriage prepaid anywhere, the 1907 edition of the Blue Book of American Shipping. This is the standard marine directory of the United States. It contains a complete list of all vessels of American register with their leading dimensions and the names and addresses of their managing owners—both for the lakes and ocean. This list is practically invaluable to those who are endeavoring to reach this important trade. There are also included complete lists of trades and professions allied to shipping as, for instance, admiralty lawyers, naval architects, army engineers, federal judges, ship builders, engine and boiler builders, power boat builders, custom officers, wreckers, dredging contractors and all departments of the national government, having to do with shipping.

In its relation to lake commerce the Blue Book has built up a great mass of statistical information that is invaluable. There is incorporated within it tables showing the total commerce of the lakes annually for the past thirty years. The details of the first ore trade are especially re-

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fined and includes the capacities of shipping and receiving docks, the mines, their ownership and the character of their output. The Blue Book is the history of the great lakes in its most vital form.

"ALL HANDS ON DECK."

Get to windward of your calling. You can do this very easily by becoming a regular reader of the MARINE REVIEW. The MARINE REVIEW'S nautical department in this respect is very complete. A portion of each issue is devoted to self-explanatory instructions that will help you in getting to the bridge—the high ratline in the business. The MARINE REVIEW is running a special course of instructions for the advancement of wheelsmen and watchmen; another course of instructions for mates and masters, together with a question and answer department. This department is open to all. These instructions are equal to those of any nautical school, and they are more valuable because they remain with you. They are based on lake principles and are for lake men, so that you are not required to flounder through pages of things that are only applicable to the deep-water sailor. This has been the great trouble in the past. The MARINE REVIEW'S expert looks after this work and nothing escapes his attention that will further the interests of the men aboard ship. No other marine journal in the world can make this boast. You get all this, besides a lot of other reading matter that will interest you, for $3.00 a year. You will often find that a single article in a single issue will be worth more to you than the cost of a year's subscription. Not only this, the MARINE REVIEW often enlarges on its publications through its columns. You cannot miss any of these good treats if you are a subscriber. The MARINE REVIEW makes it a point to explain everything in a common-sense way and in simple language so that it is readily understandable by the novice as well as the professional. The MARINE REVIEW endeavors to see how simple it can make its explanations while the majority of other works along these lines, endeavor, it would seem, to see how difficult they can make them. Give the MARINE REVIEW a trial. It will please you.

IRON SITUATION.

A lighter volume of current new business in finished iron and steel lines has brought about a less secureness of prices, and cutting in some products is reported, especially in sheets, iron pipe, nuts and bolts. Although pig iron prices are being fairly well maintained, desirable business frequently brings lower quotations in northern markets. New structural business is not heavy. Coke continues strong and active, but old material is weak and lifeless.

DULUTH GRAIN SHIPMENT.

Grain receipts at Duluth, week ending Sept. 22, were light and shipments proportionately small.

	Receipts.	Shipments.
Wheat	1,402,874	857,062
Corn	.....	.....
Oats	64,467	20,776
Rye	11,564	1,261
Barley	544,669	218,008
Flax	91,631	131,666

LIGHT ORE SHIPMENTS.

Duluth, Minn., Sept. 23.—Shipments of ore from the different docks at the head of the lakes were light during the past week on account of wet weather. The Duluth-Mesabi Northern shipped from its dock at West Duluth 487,938 tons. The Great Northern Railway Co. shipped from its dock at Superior 226,424 tons and the Duluth & Iron Range railroad shipped from its dock at Two Harbors 270,959 tons. Total number of cargoes loaded, 60.

TWO NEW FREIGHTERS ORDERED.

Orders for two new freighters for 1908 delivery were given to the American Ship Building Co. on Wednesday of this week. The first contract was given by W. H. Becker of Cleveland for a steamer to be a duplicate of the Francis L. Robbins of the Becker fleet, and the new steamer will therefore be 400 ft. over all, 380 ft. keel, 50 ft. beam, and 28 ft. deep. She will have triple-expansion engines and Scotch boilers, and will have a carrying capacity of 6,300 gross tons. This is the second steamer contracted for by Mr. Becker for 1908 delivery.

The second order was placed by J. R. Davock of Cleveland for a steamer to be 440 ft. over all, 420 ft. keel, 52 ft. beam, and 28 ft. deep. She will be equipped with triple-expansion engines with cylinders 22, 35 and 58 in. diameter by 42-in. stroke, supplied with steam from Scotch boilers, 13 ft. 9 in. in diameter by 11 ft. 6 in. long. She will have a carrying capacity of 7,500 tons.

GENERAL CHART OF THE GREAT LAKES ISSUED.

The United States lake survey has just issued a chart of the great lakes region. It is printed in five colors on a scale of 19 miles to the inch, and is intended for the use of navigators. The chart is big enough to show the whole lake system from Duluth and Chicago to Montreal, and the sheet, 32 in. by 46 in., is small enough to fit in a master's chart case.

Here are some of the features making it valuable for navigation and allied interests:

Primary sailing courses, with distances, are shown for all the lakes.

All water areas with 3½ fathoms of water or less are shown in blue. The deep water is in white, with the 10, 25, 50 and 100-fathom depths indicated by dotted contour lines. All land areas are in buff tint.

Lines showing the compass variations over the whole region are printed in red. Places where there is a local magnetic disturbance are conspicuously marked.

Curves are given showing the lowest and highest monthly mean heights of the water in each of the lakes from 1860 to 1905.

Tables are incorporated giving lengths, terminal points and locks with their dimensions, of the United States and Canadian canals tributary to the great lakes.

Tables of dry docks on the lakes with dimensions are given.

Populations of cities and towns bordering the lakes are indicated by varied symbols and graded scales of lettering.

This valuable chart is on sale in the office of the MARINE REVIEW.

NAVY FITTINGS OBSOLETE.

The electrical fittings for the big battleship Nebraska, which was built at Seattle, Wash., by Moran Bros. Co., will be entirely torn out and replaced by improved appliances. The plans for the Nebraska's electrical fittings were drawn six years ago, and have been vastly improved upon by later discoveries in naval architecture. In all, about six months' work is to be done on this new warship and all of it is directed to improve various parts which more recent discoveries in naval construction show are antiquated.

Leon A. Clark, who for seven years has acted as private secretary to Victor E. Metcalf, secretary of the navy, has resigned this post to devote himself to the practice of law at Oakland, Cal.

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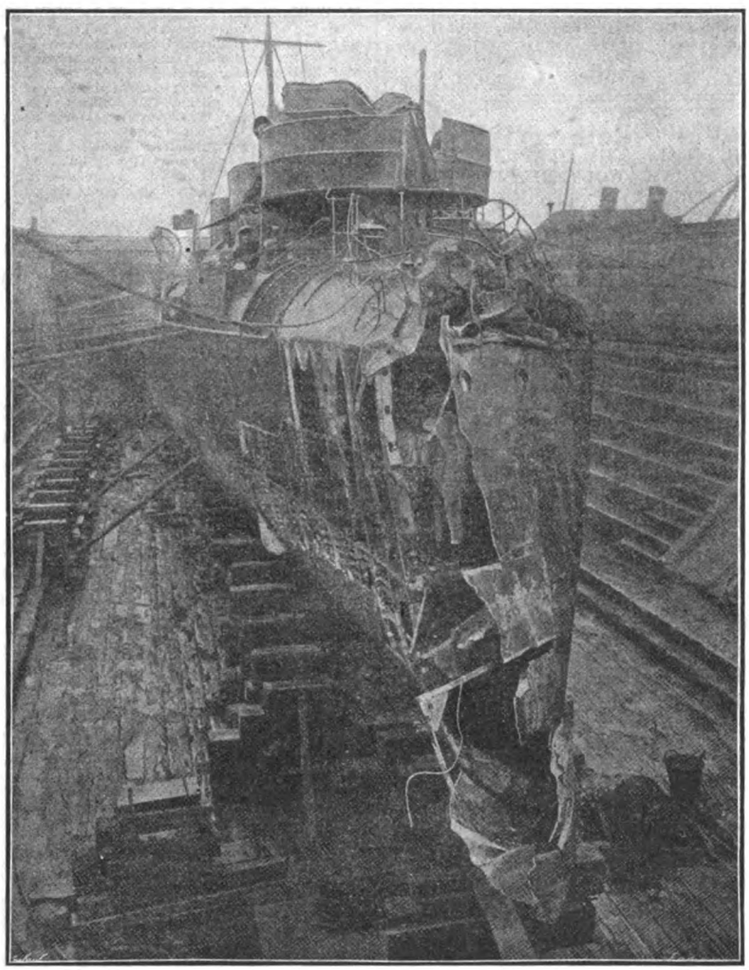
ACCIDENT TO H. M. S. KESTREL.

The British torpedo boat destroyer Kestrel was recently in a collision with the torpedo boat destroyer Teviot, with the result that she received the injuries shown in the accompanying photograph. It appears that while night evolutions were being performed off Portsmouth the Teviot, going at full speed, crashed into the Kestrel, carrying away the whole of her bows for a length of about 30 ft., and it will be noticed that the plates were simply scraped off on the starboard side. On the port side the framework and plating were so badly damaged that the steel front buckled over in front of the gaping hole. The water-tight bulkheads fortunately held or it is certain that the vessel would have sunk. At the time of the accident it was very dark, with a rough sea and a heavy gale blowing and the vessels were engaged in performing maneuvers with their lights out. The injured vessel was towed into Portsmouth harbor after temporary repairs had been accomplished which made it possible. There was no loss of life in this remarkable accident. The Kestrel was launched in 1898 at Clydebank and is 210 ft. in length, 20.5 ft. beam and draws a maximum of 11 ft. of water. Her engines are of 5,800 I. H. P. and on her trial she attained an extreme speed of 30 knots.



H. M. S. DESTROYER KESTREL IN DRY DOCK.

The Newport News Ship Building & Dry Dock Co., Newport News, Va., has been awarded the contract for constructing revenue cutter No. 18, for the sum of $166,000.

DEPLORES SUBSIDY.

Herr Ballin, president of the Hamburg-American Steamship Co., recently declared in a speech to a gathering of German bankers entertained aboard the steamer Deutschland, that England in the Atlantic fight had dropped her principle of the free play of forces to which she owed her brilliant economic development and had richly endowed a single company so that it should only by a little excel the German liners. Everywhere, even in economically poor countries, he said, an effort was being made to produce artificially a shipping business at the cost of taxpayers. It had been forgotten that such hothouse plants could not flourish in the keen air of free world competition. Herr Ballin expressed the hope that finally, as in the case of sugar bounties, such an unsound policy would be stopped by international agreement. Herr Ballin's speech is taken to indicate the expectation that the Lusitania would win a record in her forthcoming journey.

CAPTAIN PRITCHARD TO COMMAND MAURETANIA.

The Liverpool *Journal of Commerce* is authority for the statement that Capt. J. Pritchard, of the Cunarder Caronia, is to command the Mauretania, sister ship of the Lusitania, and which is now nearing completion on the Tyne. Like his colleague, Captain Watt, of the Lusitania, Captain Pritchard is a graduate of the sailing vessel and joined the Cunard in 1875 as a junior officer, rising through the various stages of promotions and has held berths on most of the prominent vessels of that line. He will be succeeded on the Caronia by Captain Turner of the Ivernia, who will in turn be succeeded by Lieut. A. G. Dunning, R. N. R., of the Brescia, who has previously been in command of several vessels.

CONSTITUTION TO REMAIN AT CHARLESTOWN.

Acting Secretary of the Navy Newberry recently denied the report that the old frigate Constitution, recently restored to its original form, was to be sent to Annapolis. It is evident that the protest which arose in Boston over the proposed removal from the Charlestown navy yard has had the desired effect. It had been argued in favor of the proposition that the room occupied by the historic old vessel was needed for the work of the navy yard and that if the people of Boston wanted the relic they should provide a suitable anchorage for her. Nothing has been done in that direction, however, and it is probable that the Constitution will remain at the yard indefinitely.

SALE OF EASTERN SHIP BUILDING CO.'S PLANT.

It has been announced by Mr. Charles R. Hanscom, president of the Eastern Ship Building Co. of New London, Conn., that the plant has been acquired by a syndicate of New London men and that if business warrants work will be begun there. The yard is being cleared of all scrap

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and the buildings and machinery are to be put in repair.

This plant has been shut down since the construction of the liners Dakota and Minnesota for the Great Northern Steamship Co. several years ago, which vessels were the only ones ever constructed there.

The names of the men forming the syndicate have not as yet been made public.

DESTROYER CONTRACTS AWARDED.

The contracts for the construction of five torpedo boat destroyers for the United States navy were awarded Sept. 20 to the following bidders: William Cramp & Sons, Philadelphia, Pa., two ships at $585,000 each; the Bath Iron Works, Bath, Me., two ships at $624,000 each; the New York Ship Building Co., Camden, N. J., one ship at $645,000.

The hulls of all these vessels are to be on plans prepared by the navy department and the machinery on plans provided by the bidders. Turbine machinery of the Parsons type is to be installed in all the vessels.

NEW YORK-BOSTON TURBINE SERVICE.

On Sept. 18 there was inaugurated by the Metropolitan Steamship Co., of New York, the new 15-hour, outside service between New York and Boston by the sailing of the steel turbine steamers Yale and Harvard, the former from Boston and the latter from New York. That there will be no difficulty in maintaining the 15-hour schedule was demonstrated by the fact that the Yale was inside it by 15 minutes on her first trip.

The establishment of an all-water route passenger service between these ports by the Metropolitan line is a notable event in transportation history.

It is expected the New York and Boston business man can leave either port at 5 p. m. He can enjoy a refreshing night's sleep and arrive at his destination at 8 o'clock the following morning ready for the day's business.

There is abundant evidence of discriminating taste in the decorations of both vessels. The colors of the universities whose names the vessels bear have been adopted in the decorative scheme of each vessel, the Yale being decorated in blue and the Harvard in crimson. A keen perception of the possibility of blue and crimson as a decorative color scheme has been realized by the designers of the sister ships.

The Yale and Harvard each afford accommodation for about 800 passengers. There are 40 beautifully furnished parlor staterooms, each with a double brass bed; 30 of these have tiled bathroom attached.

The designs of the Yale and Harvard were made by Mr. Andrew Fletcher, president of the W. & A. Fletcher Co., Hoboken, N. J., contracting builders. The hulls of the vessels were built at Roach's ship yard, at Chester, Pa.; the machinery was built by W. & A. Fletcher Co.; Charles M. Englis, of Brooklyn, designed and built the wood trim. The general dimensions of the Harvard, as well as of her sister ship, the Yale, are as follows: Length over all, 407 ft.; breadth over guards, 63 ft.; draught of water, loaded, 16 ft.; accommodations for passengers, 800; express freight capacity, 1,000 tons; motive power triple-screw Parsons steam turbine, 10,000 horsepower.

The route followed by the vessels is by way of Long Island Sound and thence out upon the Atlantic Ocean through Vineyard Sound, near the southern extremity of Cape Cod; then through Nantucket Sound out on the Atlantic Ocean, around Cape Cod and on to Boston, covering 322 miles.

SHIP BUILDING REPORT.

The Bureau of the Census has just published a report on ship building, prepared under the supervision of Mr. William M. Steuart, chief statistician for manufactures. The statistics included in this bulletin, which is a part of the census of manufactures of 1905, cover the calendar year 1904, with the exception of the data for Michigan, which relate to the year ending June 30, 1904.

According to these statistics, 1,097 establishments, exclusive of those conducted by the government, were engaged in iron and steel or wooden ship building. The combined capital of these establishments was $121.623,-700. They employed, on an average, 50,754 wage earners, paid $29,241,087 in wages, used materials costing $37,-463,179, and manufactured products which, including repair work, were valued at $82,769,239.

Although the number of vessels of five tons and over launched during 1904 was less by 167 than the number launched in 1880, the tonnage had increased 40.5 per cent during the period, and the average tonnage of the vessels launched, 50.9 per cent. The average value of the 2,415 vessels launched in 1880 was $7,961, whereas in 1905 the average value of the 2,248 vessels was $32,683. Of the total net tonnage launched for the merchant marine during 1904, 67.9 per cent was destined for the lake and river traffic. There is little building for foreign trade. Of the total net tonnage launched for the merchant service, only 5.2 per cent was destined for foreign trade. The fact that vessels for the coastwise, lake and river service are required by law to be American boats has made it possible for ship building to maintain a footing in this country.

Of the total net tonnage of merchant vessels launched during 1904, 64.8 per cent were built in the ship yards of the New England states and New York, New Jersey and Pennsylvania, and of the production of these states 59.6 per cent was intended for the lake and river trade.

The ship yards in the Atlantic and Gulf district launched vessels which aggregated a greater tonnage and value than the combined output of the ship yards in the other districts.

Within the last fifteen years the increasing importance of iron and steel in ship building has been especially marked. As an item of expense in 1890 the cost of iron and steel was less important than the cost of lumber, but in 1905 the cost of the former constituted 41.2 per cent and the cost of the latter only 17.9 per cent of the amount paid for materials.

NEW SIGNAL SYSTEM ON ST. LAWRENCE.

The Canadian department of marine and fisheries has just added a telephonic marine signal system for the safety of large ocean vessels between Montreal and Quebec, a distance of 180 miles.

This service provides a system of communication between ships and shore and enables the owners and agents to know of the progress of ships between these cities. It will also enable the captains of vessels to learn of the condition of affairs in the river and to avoid any unusual or unexpected danger. The 11 stations are situated at the following points: Montreal, Longue Pointe, Vercheres, Sorel, Three Rivers, Bastiscan, Cap a la Roche, Portneuf, St. Nicholas, Cap Rouge, and Quebec. These stations will command a view of the river and the channel and may be easily communicated with from passing vessels. Six of the stations will be in operation day and night, the others being day stations only.

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STOP! LOOK! LISTEN!

It would seem that the present trip of the Inland Waterways Commission along the chain of the lakes and down the Mississippi were one continuous exemplification of the timeworn sign board, and is, if one be able to foresee the consequences correctly, the forerunner of epoch-making legislative action which will have the much-needed effect of solving the transportation problem now presented to us by the monopolies of the railroads and the attendant congestion of the traffic of the country and especially in the central west.

The commission is going into details very thoroughly, judging from the interest displayed at the various stopping places, and while it is of course impossible to forecast the decisions to be incorporated in the report of the commission, much that will be of benefit to the ports locally is believed will not pass unnoticed.

The commission left Lorain for Duluth last Saturday abord the lake freighter Thomas F. Cole, of the Pittsburg Steamship Co.'s fleet, after having spent some time examining the harbor facilities at both Cleveland and Lorain.

Beside Congressman Theodore E. Burton, who is president of the commission, the party consisted of Senator William Warner of Missouri; Senator Francis G. Newlands of Nevada; John H. Blankhead, former congressman from Alabama, recently chosen to succeed the late John T. Morgan in the senate; Alexander Mackenzie, chief engineer in the United States army; W. J. McGee, F. H. Newell, Gilford Pinchot, Herbert Knox Smith, A. M. Bently, M. W. Patterson and A. D. Graham. Mr. Harry Coulby, president and general manager of the Pittsburg Steamship Co., also accompanied the party in the capacity of host.

From Duluth the commission will go to St. Paul. From that point the members will embark, Friday, and proceed down the river in a government steamboat. They plan to reach Keokuk, Ia., Sept. 30. There President Roosevelt will join them. He will deliver several important addresses along the Mississippi. The tour will end at Memphis, Oct. 4.

ANOTHER PHASE OF THE COAL PROBLEM.

Following the unprecedented action of the administration in chartering foreign vessels for the purpose of carrying coal to the Pacific coast for consumption by the battleship fleet while in these waters, comes the announcement that in spite of the fact that legal advice was obtained in high quarters warranting this infraction of the coastwise laws, the department of commerce and labor has notified the administration that if foreign colliers are so employed in carrying coal between coastwise points in the United States, the department will be obliged to enforce a statute of 1798 which provides for the payment of a tax on ships of foreign register engaged in the American coastwise trade. This tax amounts to $1.02 a net ton, being 51 cents for lighthouse dues and 51 cents for port dues.

This constitutes a very serious embarrassment to the plan, since of the list of fifteen foreign vessels with which contracts have been entered into for transporting coal, none was chartered for a rate less than $6.10 per ton, and for one it amounted to $7.50. With the tax the rate would amount in the former case to $7.12, while of the five American vessels chartered four were at the rate of $6.25 per ton, and one—from Hampton Roads to Puget Sound navy yard—at $7 per ton.

It would thus seem that the American coastwise trade is after all to be saved from this flagrant violation of the laws promulgated for its preservation and particularly that the American sailing ship, whose field of usefulness is fast narrowing, but with which the carrying of coal for long distances is still a prime factor of existence, will perhaps be allowed to convey the supply to the various coaling stations provided by the government in divers places.

EXPLOSION ON JAPANESE BATTLESHIP.

An explosion of powder within the shield of the starboard after ten-inch gun on board of the Japanese battleship Kashima, near Kure, Sept. 9, was responsible for the loss of the lives of twenty-seven of her crew, among whom were five officers, while nearly as many were severely injured.

The explosion followed an attempt to remove an unexploded shell from the gun, and while the exact details of the accident are not available it is reported that the ship is much damaged. The Kashima was built in England in 1906 and is of 16,400 tons. She is 425 ft. long, is heavily armored, mounts four 12-in. guns, four 10-in. and twelve 6-in. and a number of smaller rapid-fire guns. She carries a crew of 980 officers and men. Her speed is estimated to be above 19 knots. The Japanese navy lost the battleship Mikasa in 1905 from a mysterious explosion which caused her to sink at Sasebo.

MAURETANIA'S TRIAL TRIP.

The Cunard liner Mauretania—sister ship of the Lusitania, on which the eyes of the shipping world have been focused for some time past—left the Tyne on her preliminary trial trip on the morning of Sept. 17. The trial took place between Flamborough Head and the Aberdeenshire coast and it is calculated that the complete results will make interesting a comparison of the two leviathans.

The early reports are to the effect that she averaged 26¾ knots an hour and that this rate was frequently exceeded. The trip is announced to have been completed without a hitch and the results were in every way satisfactory. The Mauretania was launched just a year ago.

RACINE BOAT MFG. CO. TO ENLARGE BUSINESS.

The Racine Boat Mfg. Co., Muskegon, Mich., has announced its intention to enlarge its business, hitherto confined almost exclusively to the construction of smaller inland water craft, and the concern will soon have increased to such size as to attract notice from all parts of the world. The Racine Boat Mfg. Co. was formerly located at Racine, Wis., and while at that place it constructed several vessels of steel, including the Roxanna, owned by John W. Gates, and the Pathfinder, owned by E. D. Morgan, of the Morgan & Wright Tire Co., Chicago. The capital stock of the company has been increased to $400,000 and it is now proposed to enter actively into the construction of steel vessels at the new location in Muskegon, four large contracts being already on hand, as follows: 102-ft. ocean yacht for the Montana copper king, George W. Burt; 88-ft. lightship for the U. S. government; 90-ft. tug for the city of Duluth and a 50-ft. tug for the Mexican government. All these vessels are of steel.

The congressional committee of rivers and harbors went up the lakes to Duluth on the steamer Tionesta recently and after examining the harbor at Duluth-Superior left for St. Paul and thence down the Mississippi river to Memphis, Tenn., to attend the meeting of the Deep Waterways Congress.

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ATLANTIC COAST GOSSIP

Office of the MARINE REVIEW,
1005 West Street Bldg.,
New York City.

Five thousand tons of bituminous coal were shipped recently to Italy on the Italian steamer Lazio, at Philadelphia. The cargo will be delivered at Genoa and is intended for the use of the railroads.

The impressive departure of the big Lusitania on her maiden homeward voyage seemed to create scarcely less excitement than her arrival. For several hours before she cast off, the Cunard and surrounding wharfs and the giant liner herself, swarmed with visitors and sightseers. It seemed as though each of her 1,500 passengers had taken full advantage of the passenger's friend privilege, and the crew had a good hour's work getting the "All visitors ashore" order carried out.

It is a matter for regret that the presence of fog has necessitated the slowing down of the Lusitania. Thirty hours after leaving New York she was steaming a steady 23.6 knots per hour.

On the arrival of the Deutschland at New York last week some considerable notice was taken of the fact that her commander, Captain Kaempff, was making his 175th voyage with the Hamburg-American line. Captain Kaempff was born in 1855, and from the age of 14 has followed the sea. He received his captaincy in 1886, and has since commanded the finest ships of the Hamburg-American line. His thoroughness and conscientiousness have earned him the acknowledgement of the German Emperor, and his charming personality has made him one of the most popular commanders in the trans-Atlantic service.

The obsolete schoolship St. Mary's is to be replaced by the gunboat Newport, at present being used by the naval militia of Massachusetts. The Newport will be delivered into the custody of the board of education at the New York navy yard on Oct. 1.

The Pennsylvania Seamen's Friend Society announces that its free school for instruction in navigation is open at No. 423 South Front street, Philadelphia. The only expense to the student desirous of preparing for merchant service or other examination is his books. The course of instruction is under the supervision of Captain B. D. Reese, an experienced navigator. All instruments used in the school are of the latest pattern.

The cable steamship Silvertown has left London with 1,300 miles of submarine cable. This cable is to be laid between New York and Havana with a view to creating competition by reducing the time of transmission and increasing reliability. The land lines along the Atlantic coast are subject to the stormy weather.

With the turbine steamers Harvard and Yale taking regular service, the new outside line between Boston and this city has been successfully inaugurated. The steamers will average about 15 hours on the passage.

It is pointed out that college names for steamers are becoming popular. In addition to the Yale and Harvard, a Princeton was just launched for the Albany night line.

The Atlantic Transport Co. is about to inaugurate a service between Baltimore, London and Antwerp. According to the proposed schedule every two weeks vessels will sail from each of the three ports. Grain merchants, it is said, are much elated over the new line, or service, as it promises greater vessel room for Antwerp, where grain is handled in large quantities. It is intended at present to use three steamers in the new venture, the Mobile, which sails from Antwerp, Oct. 3, beginning the service.

Again the stowaway. Captain Carl Voller, of the steamer Goldenfels, was convicted in the United States district court of violating the immigration laws, and sentenced to pay a fine of $100. Captain Voller was charged by the government officials with allowing a young German, who arrived at Philadelphia on June 19 aboard the defendant's vessel as a stowaway, to escape.

After 40 years of service with the Clyde line, Theodore G. Eger, vice president and general manager, has resigned and leaves the company Oct. 1. Mr. Eger is one of the best-known men in shipping circles, and during the past 40 years of service has occupied various positions of trust and importance. He contemplates spending the coming winter in Europe.

David B. Reeve, chief engineer of the New England Steamship Co., was found dead in his stateroom on board the steamer City of Taunton, at Newport, R. I., on the 19th. Mr. Reeve was born in New York. He served as engineer in the New Bedford line, running between New York and New Bedford, until 1875. He then entered the service of the Old Colony Steamboat Co., which became the New England Steamship Co. Mr. Reeve leaves a widow.

Two hundred and forty pounds of Sumatra tobacco were discovered concealed in one of the coal bunkers of the tank steamer Rotterdam, when she arrived at Bayonne from Rotterdam. The tobacco, valued at $600, was seized and taken to the public stores. No arrests were made, as the customs officials are unable to place the responsibility.

The White Star liner Cretic, of the Mediterranean service, came up with and destroyed a derelict pontoon lighter on September 11, between Spain and the Azores. The derelict, the Volken-in-Bos, was a new steel lighter abandoned under stress of weather in tow for the Dutch East Indies. As it was impossible to salve her, Captain Kelk decided to destroy this menace to navigation. The Volken-in-Bos was fired.

It is expected that wireless communication, for commercial uses, will be established across the Atlantic within three weeks. The messages will be sent from the station at Glace Bay, N. S., and Clifden, Ireland. The Canadian Pacific and Western Union Companies both have their lines connected with Glace Bay.

Even if the navy should be engaged elsewhere, New Yorkers need have no fear of their homes in case of an attack by warships of a hostile country, according to Major General Frederick D. Grant, commanding the department of the east. While General Grant declined yesterday to make any comparisons between the work of the navy and army gunners, he did say this: "I am convinced that the gunners of the forts in my department can shoot so well that they can put warships out of action fully as fast as they can come up against them. New Yorkers need have no fear. I can block any channel to this city with the advance ships of a hostile fleet."—*N. Y. Tribune.*

Let 'em all come.

A request has been received at Washington from Seattle, Wash., to have a revenue cutter sent to Bristol bay to effect the rescue of a party of 360 fishermen, 200 of whom were Chinese, who were wrecked there when the fishing boat John Currier went ashore on the rocks Aug. 9. A party was got away to carry word of their plight, and while at that time they had provisions to last them 30 days, that time has now elapsed and it is believed that the men must be in great distress.

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THE THEORY AND PRACTICE OF LAKE NAVIGATION

BY CLARENCE E. LONG

POSITION FINDING CONTINUED.

This special department is conducted for the advancement and betterment of the lake mariner in his various stations aboard ship. Lake and coast navigation being similar, this course of instruction is applicable to both, and the foundation for deep-water navigation; hence, every sailor, no matter whether he be a fresh or salt water man, should be interested in this department. A careful study of this department will give you many hints to help along your practice. The policy of this department is to make its instructions as thoroughly practicable as possible.

A FEW THINGS TO REMEMBER.

Remember the farther a vessel is from the object the longer it will take to change the bearing, or to close it, and the shorter the distance the quicker the bearing is changed. Do not forget to note the time. The greater the speed of your ship the more necessary is this caution.

A good practice is to assume a bearing and the distance run. Multiply the distance you have supposed to run by the factor opposite the number of degrees corresponding to your bearing. Now prove it by laying it off on the chart and see how results compare. You can do this anywhere on the chart. Make a dot or cross to represent the place of the ship. Next the bearing (the number of degrees from the bow or stern). Lay the course and distance off, and multiply the distance by the factor found opposite the number of degrees of the bearing. With this distance between the points of the dividers lay off at right angles from the end of the course a line that will meet the bearing line first drawn. If you have not drawn this line long enough, continue it. To get the distance the ship is from a light when the bearing is first taken when abeam and the second bearing when abaft the beam, proceed as follows: Observe the bearing when abeam, or note the time when abeam. Run a certain distance, say 5, 6, or 7 miles and take a bearing. The number of degrees of the bearing must be reckoned from the stern, or the course reversed. An example will explain this: Steering NE at the rate of 12 miles an hour. At 3 o'clock a point of land bore abeam, and at 3:25 the same point of land bore W½N. W½N would be 4½ points from SW, the course reversed. 4½ points = 50°, and the factor corresponding to this is 1.19 which multiplied by 5, the distance run, equals 5.95 miles, the distance the ship was from the point of land when it bore abeam.

ITS CHIEF MERIT.

Where these bearings are serviceable is in verifying the course when it is a long one, like from Pilot Island to Chicago. The beauty of the method lies in the fact that you do not have to wait for the bearings to double, or to wait until a certain distance is run. It is not always possible to catch a four-point bearing. A few bearings of this kind will soon make it known whether or not the ship is making good the course sought. Its chief advantage is that it needs no reference to the chart, hence it is not necessary for the officer to leave the deck.

HOW MUCH TO HAUL OUT.

But we wish to be five miles from the point of land, but keeping the course S by E brings us off only 4.2 miles when abreast, or 0.8 (¾) mile inside of the course that leads to a position five miles W by S of the point. It then becomes necessary to "pull her out", or alter the course sufficiently to counteract this; but how much to is the next question. One way to get at it is this: Let 4.2 miles represent the radius of a circle whose circumference is to pass through the positions 4.2 miles and five miles W by S of the point of land. Double the radius to get the diameter (8.4) and this multiplied by 3.1416 and divided by 32 equals 0.8 of a mile; that is to say, that on a run of 4.2 miles one point difference in the course would equal 0.8 of a mile. Or it may be done thus: 4.2×0.2=0.84 miles. Multiplying the distance to be run by the 0.2 method is sufficiently accurate for all practical purposes. According to the above then, the course will have to be altered one point, or to SSE, or starboard a point from S by E; and to gain the position of five miles W by S (eight points from the first course S by E) from the point of land, the course of SSE will have to be steered till the point of land bears W by S, and not until the point of land bears abeam on the SSE course. To run on this course of SSE till the point of land was abeam would make its bearing WSW, and in the case that the shoal was a large one the vessel might be led into danger, in a case, for instance, where the course had to be hauled in several points, for the vessel would not be within a mile or two of the position sought. See Fig. 5 for this information.

Thus, in the diagram, Fig. 5, AE is 4.2 miles, also EP is 4.2 miles; then 4.2 × 0.7 = 2.94 × 2 = 5.88 miles, or practically six miles. If the distance is more than 10 miles use the factor 0.71; and if more than 100 use the factor 0.707. While these factors are not precisely correct, the nature of the problem does not admit of such refinements.

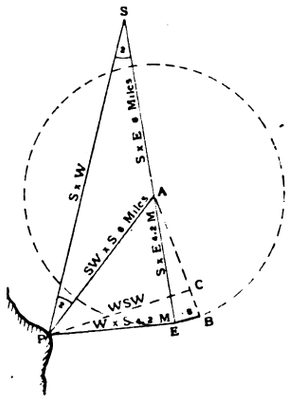

FIG. 5.

Explanation of Fig. 5: S is the position of the ship at 2:10 o'clock, when P bore S by W, or two points on the starboard bow.

A is the position of the ship at 2:40 when P bore SW by S, four points from the course.

The length of the line, S to A, is distance made in the interval, or the course S by E, and equals six miles.

AP is the second bearing, SW by S, also equal to six miles, being opposite one of the equal angles of the triangle thus formed.

AE represents the distance found by multiplying the distance SA, six miles, by the factor 0.7, and if run will lead to E, which is also 4.2 miles from P, being a four-point bearing; consequently, if the ship were to continue steering S by E, she would fetch the point E, 4.2 miles from P.

EB is 0.8 of a mile; B being five miles from P.

To reach B from A the ship must steer SSE, or an angle of one point from A to E.

The dotted circle scribed is the radius 4.2 miles, and shows the manner in which the angle of the course is determined; EB being an arc equal to 0.8 in distance, and practically a straight line—any small arc of a great circle is a straight line.

CP is at right angles to AC; C shows the position of the vessel when she has P abeam on the course SSE.

Woodsmen, desiring to know the height of a tree before cutting it, sometimes make an isosceles right-angled triangle of wood, or paper, and "step off" the distance on level ground from the point at which they find they can just see the top of the tree looking along the hypotenuse of the triangle, the base being parallel to the ground.

The height of flag staffs, chimneys, smokestacks, spires, etc., can easily be determined by this method. To make the figure of a right-angled isosceles triangle from wood take a board of any width and cut it exactly as long as it is wide. Next draw a pencil line diagonally from one corner to the

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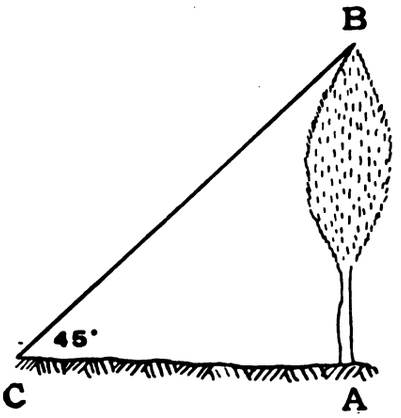
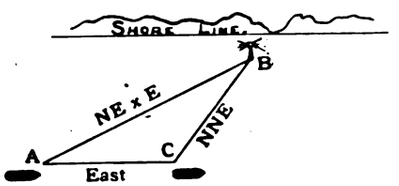
opposite corner. Next saw through on the line and either half, or piece, is the figure wanted. This can be done much better with three laths. Make a perfect square with two of them by nailing the ends together. Where they are fastened will be the right-angle. Both laths must be exactly of the same length from corner to the ends. Take the third lath and lay it from the end of one to the end of the other and fasten it by nailing.



This lath must be laid along the outer end of each of the other laths. When this is done there will be a little of the inner edge of each lath projecting over the third lath. Trim this down even with the lath over which it projects. The third lath represents the hypotenuse of the figure; the other two the equal sides. This figure will be some four feet high, and will prove very serviceable and easy to work with on account of its size.



A 3-POINT BEARING—ISOSCELES TRIANGLE

EXAMPLE.

Let A be a ship steering east; B a lighthouse bearing three points on the port bow, that is NE by E. She proceeds on her course till the light bears three points to the left of NE by E, that is NNE, then CB is equal to CA, or the distance traversed from A to C is the same distance as C to B. The angle at A and the angle at B are equal, therefore, the sides opposite these angles are equal.

CROSS-BEARINGS.

The method of cross-bearings to find the ship's place is a good one, since under certain conditions it is the only one that can be employed. Its chief merit is that current and leeway cannot take effect since both bearings are taken simultaneously. But the great trouble with this method is that it requires two fixed objects marked on the chart. These are not always to be found along every coast. The bearing requires plotting on the chart, and in order to do this the compass bearings have to be converted into true bearings by allowing for Var. and Dev.—Ely. to the right, Wly. to the left of the compass bearing. Remember that the Dev. to be used is for ship's head and not the Dev. corresponding to the direction of the bearings. This is another drawback to the method, but for accuracy it cannot be beat. The method is as follows:

Observe in quick succession the compass-bearings of two lights (or other stationary objects which are defined on the chart), so far apart that each will bear close to 45 degrees off the ship, but in opposite directions. Then refer to the chart, and by the aid of the parallel ruler and either the magnetic or true roses (if the former is used no correction is to be made for the variation in that locality, but if the true rose is employed the variation must be applied in order to convert it into a correct magnetic bearing), draw pencil lines through the objects in question, according to the respective bearings of the two objects, and the points where the lines cross will show the position

Sighting through an azimuth attachment. bb are the upright arms or sight vanes of the instrument. The dotted line from the eye to A shows the instrument in use for direct bearings of distant objects, or of a reflected bearing of the sun when partially obscured, and consists of a plain mirror, hinged, sight vanes, and prism, arranged as in the figure; t shows the reading on the compass.

of the ship at the time the bearings were taken.

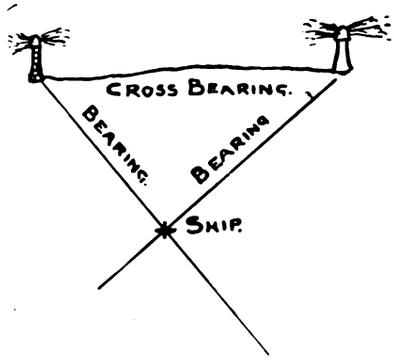
It is to be understood that the compass bearings are to be corrected for the deviation (if any exists) of the ship's head at the time the bearings were taken, so as to convert them into correct magnetic bearings before applying the lines to the chart.

The nearer the bearings are to a right-angle the more accurate the position will be defined on the chart. The bearings should not be more than 120° and not less than 60°.

SCALENE TRIANGLE BEARING.

Each side of a scalene triangle bearing is unequal. This is a very useful bearing, and like all the other bearings that have been mentioned, except the cross-bearing, affords the means of locating the vessel by two compass-bearings of the same object when in sight of land, where only a single light, headland, or other fixed feature is to be seen. This scalene bearing has to be plotted on the chart, and the bearings and course have to be corrected for Dev. and Var., and here is where it loses its charms. However, it is well worth knowing.

Rule.—Observe the bearing of the object and note the time. After holding the course until the object has



changed its bearing at least two or three points, note again its bearing and the time, and calculate the distance the vessel has run in the interval between the first and last bearings. Trace the two lines of bearing on the chart in pencil, then span the dividers to the distance run, and proceed as follows:

With the parallel ruler set to the course (over a chart compass diagram) sailed by the ship between bearings, move them toward the pencil lines until both points of the dividers, held against the beveled edge of the ruler, just fits across the lines, and these two points where the dividers rest will show the position of the vessel at the time of the first bearing as well as her place at the time of the second bearing.

The two compass-bearings must be corrected for the deviation, as well as the variation (if any exists) of the ship's head at the time the bearings are taken, so as to convert them into true bearings before tracing them on the chart. The compass course must also have the variation and deviation applied thereto in order to reduce it to a true course before setting the parallel ruler by the compass rose on the chart.

THE OTHER DODGE BEARING.

Here is another dodge bearing, which is as follows: When an object on shore is abeam, note the time and distance run until the object changes its bearing 2½ points. Twice the distance run in the interval is the distance from the object. In the dodges no allowance is to be made for Dev.

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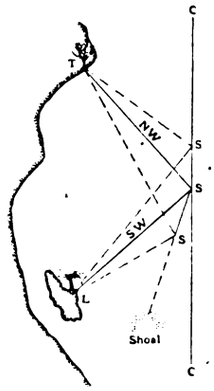
and Var. unless you desire to find your exact position on the chart.

TO BERTH YOUR SHIP AT AN ANCHORAGE.

Select the spot on the chart where you wish to anchor. Note the soundings and have your cable ranges overhauled for at least three times that depth. Draw a circle around the spot, with a radius about three times the length of the cable to be let go.



See if you will have swinging room at all points on the circumference of the circle, and also plenty of room for getting underway with the wind in any direction, for you may not be able to bring up just at the center of your circle. Now lay down cross-bearings on the circumference of your anchorage at the side from which you expect to approach it. When you get those bearings on your compass, round up and let go. After anchoring ascertain the exact position of your vessel by new cross-bearings.

QUESTIONS FOR WHEELSMEN AND WATCHMEN.

SEVENTEENTH INSTALLMENT.

This course of instruction by the question and answer method was commenced in the May 23 issue of the MARINE REVIEW. It is for the purpose of promoting the young man aboard ship. It tells him the steps necessary in the examination for first papers, and it deals with only those problems that are absolutely necessary for him to know. This feature of the paper has met with a great deal of encouragement. New subscribers will be furnished with the questions and answers from the start, so that it will prove as available to the new reader as the old. Even licensed men have taken a lively interest in this department, and are watching it with interest.

189. Draw a diagram illustrating Rule VI of Pilot Rules.

190. What is meant by the First and Second Situations of the Pilot Rules?

191. If you were steering NE and a lighthouse bore 2 points abaft your port beam, what would its bearing be by compass?

192. At what distance is the foremast head light of a steamer supposed to be visible on a clear night?

193. How far should the colored lights be seen?

194. What does a red buoy indicate?

195. Going into a channel from seaward on which side would you pass the red buoys?

196. What is a gas buoy?

197. What is a fixed light?

198. What is meant by the abbreviation F. W. in regard to lights?

199. What does F. R. mean?

200. What is a flashing light?

QUESTIONS FOR MASTERS AND MATES.—NO. 43.

(This department was started over a year ago. It covers in large measure the course of instructions in The Theory and Practice of Lake Navigation. It is for the purpose of seeing how well those interested in the study understand the course. The answers to these questions are to be published at the conclusion of the instructions. A person can learn more from such a set of questions, if he will take the time to study the answers, than in any other way. This is because he relies upon himself for the information and does his own thinking. It likewise helps to broaden his mind and intellect, and too, the study of one branch of science increases one's power to master another. One master, who is taking a lively interest in this department, writes that he is getting the greatest amount of good from following and endeavoring to answer the questions in his own way.

591. At anchor in a heavy gale with engines broken down, how would you reduce the strain on the windlass?

592. On the course from SE Shoal to Buffalo and are to be 4 miles off Long Pt. when you have it abreast; you encounter a heavy fog and do not hear the whistle at Long Pt., how would you verify your position?

593. Making Milwaukee in a heavy fog, how would you tell whether you were making good your course two hours before running your time out?

594. How would you know if you were fetching northerly under the same conditions?

595. You have charge of the deck of a steamer under way outside, and a cry is raised of a man overboard on the port bow; what is the first order you would give, and why?

596. What is meant by a right-handed screw propeller?

597. What is meant by a left-handed screw?

598. What effect has a right-handed screw on a ship going ahead?

599. What effect has a left-handed screw on a ship going ahead?

600. How would you turn a steamship short around with a right-handed propeller?

601. Which end of ship does the rudder move?

The lighthouse board at Washington has rejected all bids opened Aug. 19 for the construction of light vessel No. 82.

ANSWERS TO QUESTIONS FOR WHEELSMEN AND WATCHMEN.

FOURTEENTH INSTALLMENT. PUBLISHED AUG. 29.

(New subscribers will be supplied with all back numbers of the MARINE REVIEW from the time this special course was started. You may get them at any time as long as they last.)

155. The vessel would show a lighted torch or flare-up light upon that point or quarter to which the steamer was approaching.

156. His stern or range lights, all others would be shut out.

157. The one steering SE has the right of way. You blow one blast and port your helm and go astern. The other fellow answers with one blast but holds his course and speed.

158. The fellow steering South goes astern. He starboards his helm and you hold your course.

159. From NE to SSE.

160. On the starboard side.

161. After or range light and the light aft for the tow to steer by and also a similar light on the stern of the tow.

162. By the two lights mentioned above.

163. The one ahead would show a lighted torch at her stern or on her quarter.

164. Port my helm.

165. About NW x W½W.

166. All courses between west and east by way of south. The wind must be abaft the beam, or more than 8 points from the direction of the wind.

A FEW HINTS NAVIGATIONALLY.

(For the apprentice and subordinate officer aboard ship.)

As long as you keep a green light open to a green light, or a red light open to a red light, no collision can occur between passing steamers.

Strength of Ropes. — Breaking strain, etc. (hawser laid). Rule.—Square the circumference and divide by 3 for the breaking strain, in tons; by 4 for the proof strain; by 6 for the working strain. Example:

Rope 6 inches in circumference.

6

—

3)36

—

12 tons = breaking strain.

Nine tons for proof strain and 6 tons working strain.

Note.—Bear in mind that rope is measured by its circumference and not by its diameter. When we speak of a 6-inch line it is meant 6 inches in circumference and not 6 inches in diameter.

To Calculate the Weight of Rope.—

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Three strand, hawser-laid, 25 thread yarn tarred. Multiply the square of the circumference by the length in fathoms, and divide by 4.24 for the weight in pounds. Example:

What is the weight of 100 fathoms of 6-inch rope?

```
        36
       100
      ----
4.24)3600.000(867.9 lbs.
     3312
     ----
      2880
      2544
      ----
      3360
      2968
      ----
      3920
      3816
      ----
```

Weight a Rope Will Lift When Rove as a Tackle.—Multiply the weight the rope is capable of suspending by the number of parts at the movable block, and subtract one-fourth of this for resistance. Example:

What weight will a 6-inch rope lift rove as a two-fold purchase, i. e., four parts at the movable block?

A 6-inch rope has a working strain of 6 tons, and this multiplied by the four parts equals 24 tons, and ¼ of 24 tons equals 6 and 24 minus 6 equals 18 tons that such a purchase will sustain.

To Set a Patent Log.—Turn all pointers to zero; turn the hands or pointers forward, never backward.

Finding a Ship's Speed.—Frequently it is of some importance to know the exact speed of a ship at such times when the only opportunity to obtain it is from a short run. The following method is available for any run, no matter how short:

Rule.—Note the interval of time and the distance run. Then multiply the distance run by the number of minutes in 1 hour and divide the product by the number of minutes in which the run was made. The result will be the speed per hour.

Example: Ship has run 4¼ miles in 21 minutes, what is her speed per hour?

```
Distance run 4¼ miles = 4.25
Minutes in 1 hour =   x   60
                      ----
21)255.00(12.14*
   21
   --
   45
   42
   --
   30
   21
   --
   90
   84
   --
```

*Speed per hour.

ON OUR QUARTER-DECK

Where the Marine Review With Its Friends and Patrons Get Together and Talk It Over

It may not be out of place to mention the fact that "our quarter-deck" is very much unlike the quarter-deck of the olden time, where only the "Old Man" trod and ruled with the iron hand of dignity and discipline. Those were strenuous times compared with present day standards, but that they were necessary then, is only too evident. On our quarter-deck you may say just what you think without running the risk of being knocked down with a belaying-pin or being keelhauled. This department can be made very interesting with a little help from our readers. If you have anything of interest, or of interest to friends, send it in. Offer suggestions; tell what you like and what you dislike. It is our desire to please you.

THE MYSTERIES OF FOG.

To the Editor of the MARINE REVIEW:

Since you have so kindly asked your readers to come aft to your quarter-deck with things of interest to them and others, I have taken the liberty of sending you a clipping from *The Ocean*, I am much interested in this question and I think other sailors will be. The magazine from which I took this article is several months old and I have as yet seen no explanation of the phenomena therein mentioned. What is your opinion?

Yours truly,

A SAILOR.

Following is the clipping spoken of. It needs no further introduction:

A MYSTERY IN ECHOES.

"A peculiar problem in marine acoustics is put before the readers of *The Ocean* for solution in this letter from a correspondent in Wellesley, Massachusetts:

To the Editor of *The Ocean:*

In the autumn of 1893 I shipped as mate of a schooner bound around the Horn from Nova Scotia to Victoria, B. C. We had a good run to the Cape, making it in fifty-one days, with the usual Cape Horn weather, and nothing out of the ordinary happened until we were well up the west coast. Here an incident occurred which I have never been able to explain. Perhaps some of *The Ocean's* readers will be able to throw some light upon it.

It was about four bells in the morning watch. The wind was very light, and a thick white mist enveloped the ocean, making it impossible to see two ship's lengths ahead, but as the ship barely had steerageway and we seemed to be alone, nothing was thought of it.

I had occasion to call out to a man doing some work on the mainmasthead. I noticed that the captain, standing near me on the quarter-deck, listened attentively for a minute, then asked me to shout again and to listen also. I did so, and was astonished to hear the echo of my own voice come back plainly to me.

Knowing that we were two hundred miles from the nearest land, we looked at each other for an explanation. Forward, I found the man on lookout peering out through the fog. He, too, had heard the echo.

The captain now hailed the masthead, and I heard the echo so plainly that I sang out to put the helm down and let the ship come about, feeling sure that we must be close to something. As the schooner came slowly in stays, every creak of a block and the voices of the men were distinctly thrown back, as from a cliff.

For about half an hour we lay by, watching developments. At the end of that time the fog lifted, and a few moments more saw a clear sky and ocean, with no land and not a sail in sight.

Can any one explain what made the echo? I have talked to many men, but none offered any solution of the problem.

ARTHUR TURNER.

"On the water, sound often plays some queer tricks. It is on record, for example, that on one arctic expedition two men carried on a conversation while separated by a mile and a quarter of smooth ice. But the fact that sound carries so easily over water or ice makes the incident described by Mr. Turner all the more extraordinary."

While navigators are quite familiar with the above phenomena, no theory has ever been advanced and accepted as a proper explanation. A very comprehensive article was written on this subject and printed in these columns some six months ago. Sound is conveyed in a very capricious way through the atmosphere, and apart from wind or visible obstructions, large areas of silence have been found in different directions and at different distances from the origin of a sound. These are called inaudible zones. They are shifting areas, however, so that what is an inaudible zone one moment may be an audible one the next moment. These inaudible zones are to be observed in clear as well as in thick weather, even in the clearest of weather and under a cloudless sky. Investigations have proven that sound is liable to be intercepted by streams of air unequally heated and unequally saturated with moisture. Under such conditions the intercepted vibrations are weakened by repeated reflections. Experiments have also clearly shown that rain, hail, snow and fog have no power to obstruct sound; in fact, it has been shown that the condition of the air associated with fog is actually favorable to the transmission of sound. While this may be true it is nevertheless a fact that sound waves do not travel as far or as fast during foggy weather as they do in clear weather, due to the greater density of the atmosphere. While sound waves are interrupted in their travel owing to the changes in the air currents there is nothing on record to show that the phenomena of echoes, as above mentioned, have ever occurred in a clear atmosphere. This

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could be accounted for in two ways. First, the wind may interfere with the echo in case the atmospheric conditions were favorable for returning the sound waves. Second, in a calm the lower air currents are at rest with the atmosphere at about the same density, so that there would be no chance for the warm and cold currents of air in interlacing with each other to "wall up" and thereby stop the sound waves and return them as an echo.

Every sailor has observed the variable changes of fog during its prevalence. Sometimes it will be so thick and heavy that it can almost be cut with a knife, and at other times not near so dense; sometimes so dense that one could not see half a ship's length and at other times objects could be observed two or three ship's lengths away. These changes do not occur with any regularity but on the other hand depend entirely on the condition of the atmosphere, which of course, is variable. Fog is produced by warm saturated air being cooled, the same as the vapor from steam when it escapes into the open air. The changes in the density of fog are due to the changes in the air currents, so that if the air currents deflect the sound waves, it is reasonable to believe that under abnormal conditions of the atmosphere and heavy fog the banking up of the latter could be sufficiently great as to not only stop but to return the sound to the direction from which it came, or to deflect it in another direction or angle. A good illustration of the circulation of air currents is to be observed during a fog accompanied by a wind. The various changes and shades or densities of the fog are pictures of the air currents.

Every seaman knows that the direction from which the sound of a fog signal comes cannot be located with any degree of certainty unless the sound producing device is quite close. In fact there are times when the sound apparently comes from points of the compass directly opposite each other. It seems reasonable, in this case, to suppose one of these sounds to be the echo of the original, but then there comes the difficulty of determining the original. Then again, instead of one of the sounds being an echo, they may be the fog signals of two different ships.

The only way to distinguish an echo from a fog signal is not to sound the signal with a uniform blast. Blow a very long or short blast occasionally. If a long blast is given and a short one is heard, or a short one is given and a long one heard, it is quite evident that the sound is not an echo. However, as a matter of safety and precaution, these sounds should not be considered as echoes at any time as there are too many opportunities for fatal error. An echo will be heard all the time the same, while a fog signal will seem nearer or farther away at each blast.

The only theory that seems to account for these so-called mysteries of sound, is that the sound waves increase in size as the distance from the source becomes greater until they become huge waves and pass over a ship that happens to be in that unfortunate position and descend so that those on board the ship at the greater distance would hear the sound.—Ed.]

The MARINE REVIEW invites opinions of every sort, criticisms, praise, questions, and information of all kinds. Until the MARINE REVIEW is made so excellent that nothing can be said against it, each complaint will help toward attaining the perfection desired. Come aft to our quarter-deck, either in person or through the mail, and make your wants known.

AROUND THE GREAT LAKES.

Mr. James C. Wallace, president of the American Ship Building Co., who has been abroad, has returned.

The steamer Rochester, building for the Western Transit Co. at the Ecorse yard of the Great Lakes Engineering Works, will probably be launched next Saturday.

James Gasco, of Detroit, a watchman on the steamer George Stone, was washed overboard by the heavy seas on Lake Superior last Saturday and was drowned.

A gas buoy light at the head of the shoal at Port Huron is out and a fixed white lens light is hung on framework showing all around the horizon until the light is replaced.

The hulk of the steamer Naomi, which burned off Muskegon in May of the present season, was taken to Manitowoc last week by the steamer Illinois, to be entirely rebuilt.

A small lighthouse located on Osceola sands, a point projecting into Portage lake, was blown from its foundations and carried away. Repairs will be started immediately.

The new steamer Cypress of the Lackawanna Steamship Co.'s fleet left the Lorain yard of the American Ship Building Co. on Monday of this week. She was commanded by Capt. F. B. Huyck.

Mosier & Summers of Buffalo were the lowest bidders for the construction of a marine hospital at Buffalo. Work is to be begun at once and the building will be completed in 1909.

The Bennett-Schnorbach Co. of Muskegon, Mich., has purchased the old passenger steamer Empire State and will convert her into a stone barge. She will be ready to go into commission next spring.

The new plant for fueling steamers of the Cleveland & Buffalo line at Buffalo was operated last Friday for the first time. The conveyor loaded eighty tons of coal from the cars into one of the steamers in forty-six minutes.

The old Watson elevator at Buffalo was destroyed by fire on Saturday last. This elevator was over fifty years old, but had not been in service for the last six years. The harbor entrance was badly blocked by the fire and many vessels were delayed.

James Realff, of St. Clair, steward on the steamer Hurlbut W. Smith, was killed at Chicago last week while the boat was in dry dock. He fell from the deck of the vessel, receiving injuries that resulted in his death at the marine hospital a few hours later.

The steamer W. B. Kerr of the Weston Transit Co.'s fleet which struck in the Soo river, was placed in dry dock at Superior last Friday for repairs. She has thirty-five or forty damaged plates and it will take about three weeks to complete work upon her.

As the result of a collision which occurred between the steamer Colgate and Barge 133, which the steamer had in tow, the Colgate had a large hole torn in her stern on the starboard side, and the bow of the whaleback was seriously injured. Both boats will be repaired at Superior.

The new steamer Salt Lake City, owned by W. A. Hawgood of Cleveland, broke all records for quick work at the South Chicago ship yard last Thursday, when she left on her maiden trip. The steamer was launched on August 29. Capt. James Owen of Cleveland will sail the steamer.

John H. O'Meara, pilot on the tug Carrington, and Tracy D. Cartland, pilot on the tug Walton B., were both suspended fifteen days as the result of an investigation into the cause of the collision which occurred between the tugs at the Interstate drawbridge at Duluth on Sept. 7.

A dispatch from Sandusky is to the effect that five or six electric rigs will be installed on the Hanna docks at that port before the season of 1908 begins, capable of handling between 4,000 and 5,000 tons additional each

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ten hours. Further channel improvements are also announced in the vicinity of the Hanna property.

The steamer City of Glasgow, owned by Hutchinson & Co. of Cleveland, which sprang a leak while being loaded at the Great Northern ore docks at Superior and sank recently, has been floated after lightering about 700 tons of her cargo. The vessel was not docked for repairs, but was calked and then left for the lower lakes.

The United States Lake Survey steamer General Williams has located the wreck of the steamer Grand Traverse in Lake Erie near Colchester. The wreck lies about a mile north and a half-mile west of the Colchester lighthouse. The obstruction has temporarily been marked by a white flag with a red center with the name U. S. Survey printed on it.

The wreck of the Lake Michigan Car Ferry Transportation Co.'s barge No. 2 off Calumet Harbor (South Chicago) has been completely removed to a depth of not less than 36 ft., so as no longer to interfere with navigation. This barge was sunk and abandoned last June at a point in Lake Michigan three miles from Calumet breakwater light and close to the course from Chicago to Indiana Harbor.

A party of Canadians and English capitalists who are behind the Georgian Bay canal project have recently made a visit to Duluth, reported to be for the purpose of considering locations for important dock construction planned for Duluth in connection with the proposed canal. It is believed that the Duluth, Rainy Lake & Winnipeg Railway Co. will play an important part in these plans, as an outlet from the Canadian Northwest grain country. A part of the project is reported to be a steamship line direct from Duluth to European ports.

The Canadian steamer Edmonton of the Matthews line, Toronto, is in dry dock at the Ecorse yard of the Great Lakes Engineering Works. The steamer is in pretty bad shape, her stem being badly twisted and about twenty of the bottom plates having to be taken off. A number of frames are also broken, and it will take two or three weeks to complete repairs. The Edmonton ran on the rocks in the St. Lawrence river while going at full speed. The steering gear of the vessel gave way.

The steamer Picton of the Richelieu & Ontario Navigation Co.'s fleet was burned at her wharf at Toronto Sept. 21. Two lives were lost, Miss Winnie Hatch of Montreal, a passenger, and George Kleskie, a fireman. The Picton was one of the oldest boats on the lakes and was formerly known as the Corsican but was refitted two years ago and given the new name. The vessel was 140 ft. long and valued at $100,000. She had a valuable cargo on board and was due to sail within a few hours. The cargo loss is estimated at between $20.000 and $30,000.

The steamer Isaac L. Elwood of the Pittsburg Steamship Co.'s fleet, which was in collision with the steamer A. G. Brower at Bar Point on Aug. 27, has been placed in dry dock at Cleveland, where she will be extensively repaired. The Ellwood has a hole in her side about 40 ft. long and two plates wide. The break is at the turn of the bilge. Bad weather greatly interfered with the wrecking operations on the Ellwood. The work was in charge of Capt. W. W. Smith, marine superintendent for the Pittsburg Steamship Co. The steamer Brower was taken to Toledo for repairs where she will be in dock for two or three weeks.

The United States Weather Bureau has just issued Meteorological Chart of the Great Lakes, No. 2, for the year 1906, in which is given the record of accidents to vessels during the season, and much other information of a kindred nature. A notable feature is the statement that 250 lives were lost on the lakes in 1906 through the stress of weather or other causes, Lake Erie alone being accountable for 85 of that number. Lake Superior holds the record for monetary losses, her share of the grim harvest amounting to $691,000 out of a total of $2,043,850. The compilation of these figures was accomplished under the direction of Willis L. Moore, chief of the weather bureau, by Alfred J. Henry and Norman B. Conger.

The Edward Bros. Dredge Co. of Sault Ste. Marie, Mich., were the only bidders for completing the grading at the naval training station for the great lakes at North Chicago. Their bid was 81 cents per cubic yard. There are about 33,000 cubic yards of earth to be removed.

The Canadian barge F. L. Danforth, owned by the Quebec Transportation & Forwarding Co., Ltd., Quebec, was lost in a gale recently off the mouth of the Pentecost river. She was loaded with pulpwood. This company lately suffered the loss of the steamer Orion also, she having stranded on Calf Island, Lake Ontario, becoming what was at first believed to be a total loss. It is now thought that the hull can be converted into a barge.

The wrecker Favorite has abandoned work on releasing the schooner Galatea, which ran aground at Grand Marais, Lake Superior, two years ago. The Favorite spent seven months in an endeavor to release her, but has now given up the task. The Galatea was cast high and dry on the beach and was drawing about seven feet of sand when the wrecker began work upon her. Sand pumps were used and a channel dredged to deep water, and the schooner was drawn 1,500 ft. farther out into the lake. She is now owned by the Great Lakes Towing Co., owners of the Favorite, and the cost of wrecking her has far exceeded her value. She will therefore probably be abandoned altogether.

THREATENED LOCKOUT IN ENGLAND.

Advices received from England indicate that on Oct. 5 from 40,000 to 50,000 members of the Boilermakers' Society will be locked out by the Ship Builders' Federation. The men affected are employed chiefly at the east coast yards, at Barrow and on the Clyde.

Some time ago lockout notices were issued because of a number of sectional strikes in which the men left work without giving notice and without discussion of their grievances.

The notices, however, were withdrawn and what is known as the Edinburgh agreement was entered into. Under this the representatives of the men stipulated that such annoying strikes would be avoided in the future.

The society repudiated the action of its representatives and the federation is now determined to fight the men to a finish.

What is believed to be the result of the failure of the peace conference at The Hague to arrive at any definite conclusion has prompted the British admiralty to order the construction of the fifth and sixth battleships of the Dreadnaught type to proceed with great haste at the Portsmouth and Devonport dock yards respectively. The vessels are to be of 19,300 tons each and will carry eight 13.5-in. guns. It will be recalled that the building of these battleships was announced some time ago to be contingent upon the result of the second peace conference.

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ELECTRIC HEATING AND COOKING DEVICES ABOARD SHIP.

Electric heating and cooking devices for marine use is the title of a handsome publication just issued by the General Electric Co. as Bulletin No. 4523. The pamphlet is bound in a neat cover and contains illustrated descriptions of small apparatus particularly useful in ships' galleys, staterooms, smoking rooms, sick bays, etc.

A ship's lighting plant, usually of more than ample capacity for intermittent load, offers at once an available source of supply, which, utilized for cooking, heating, etc., would provide numerous real and profitable conveniences with small increase in cost.

The electric heater on account of its compactness, neatness, easy regulation and simplicity is ideal for stateroom use. The General Electric Co. manufactures several forms, including luminous radiators and non-luminous air heaters. One or two-quart water heaters, electric wash bowls and electric shaving mugs are familiar conveniences and electric flat irons in sizes from three to 24 pounds are supplied for the laundry. Among special devices particularly serviceable on ship board may be mentioned electric soldering irons, glue pots, curling iron heaters, surgeon instrument sterilizers, heating pads, cigar lighters, etc.

Two distinct forms of heating elements are used by the General Electric Co., known as the cartridge and quartz enamel units. Both heating units are practically infusible and indestructible but can be readily replaced if damaged by accident. The makers have taken great care in the design to insure the most efficient application of the heat and sufficient radiating surface so that nearly all the apparatus may be left in circuit indefinitely without fear of burn out.

AKERS STEERING GEAR FOR NEW STEAMERS.

Three steamers to be built by the Great Lakes Engineering Works, Detroit, Mich., are to be equipped with the Akers emergency steam steering gear, manufactured by the Akers Steering Gear Co., Chicago, Ill. The two steamers recently contracted for by the Frontier Steamship Co., North Tonawanda, N. Y., are included in this order.

STEAM HOSE.

In the evolution of the modern steamboat the pressure on the boilers has increased to such a marked extent that the ordinary steam hose that is used around the engineroom is not sufficiently strong to stand the bursting pressure required of it. The plies soon loosens and the hose disintegrates and goes to pieces. Realizing this The Republic Belting & Supply Co., of Cleveland has attempted to build a steam hose that will stand the terrific bursting pressure without the aid of any wire wrapping or any other form of cover necessary to hold the pressure. This company expects to have such a hose very shortly which will be introduced to the vessel trade at the beginning of next season. It will be called "Apollo Steam" and will probably be the highest priced steam hose sold in the United States, but the wearing qualities will make it cheaper at the price and will save engineers a great deal of annoyance and worry. Steamboat companies having trouble with their hose are advised to communicate with The Republic Belting & Supply Co.

ROGERS' CIRCULATING DEVICE.

The Rogers Combination Steam Boiler Heater, Purifier, Oil Separator and Circulating Device is being installed on a great many lake freighters. Since this device was described in the MARINE REVIEW of March 7 last it has been placed upon nearly all of the new freighters built for lake service and a great many of the older ones. Every installation has been successful and the company has now on its books several orders for future installations. It is quite apparent that the device accomplishes all that its owner claims for it. It is asserted that this device will positively prevent the formation of scale in the boiler. As scale acts as an insulator between heat in the furnace and the water in the boiler, it requires an additional consumption of fuel to secure evaporation, so much so that scale one-half inch thick increases a fuel bill by two-thirds. Herein lies one of the great merits of the device.

It now appears that the report regarding the establishment of an Oriental steamship line to run in connection with the Pacific coast extension of the St. Paul road, to be completed in 1909, had no very definite foundation. A. J. Earling, president of the railway, at the annual meeting of the road in Milwaukee recently, said that no official action had been taken with reference to the establishment of such an enterprise and expressed the opinion that as a result of the recent attacks upon corporate interests and the resultant stringency of the money market, not many new expenditures of this sort would be undertaken.

BIDS FOR EXTENSION OF BREAKWATER AT CLEVELAND, O.

Bids for extension of the east breakwater at Cleveland, O., received by Lieut.-Col. Curtis McD. Townsend, Corps of Engineers, Cleveland, O., and opened Sept. 10, were as follows:

Graves & Stephens, Cleveland, O.	$1,098,750
Great Lakes Dredge & Dock Co., Chicago, Ill.	1,464,750
Seacoast Construction Co., New York	775,500
Hunkin Bros. Construction Co., Cleveland, O.	1,680,000

BIDS FOR BREAKWATER EXTENSION AT FAIRPORT.

Bids for extension of west breakwater at Fairport Harbor, O., received by Lieut.-Col. Curtis McD. Townsend, Corps of Engineers, U. S. Army, Cleveland, O., and opened on Sept. 10, were as follows: Great Lakes Dredge & Dock Co., Chicago, Ill., $182,519; Seacoast Construction Co., New York City, $147,037; Hunkin Bros. Construction Co., Cleveland, O., $210,324.50; Knobloch & Shelton, Erie, Pa., $188,534.75; Graves & Stephens, Cleveland, O., $175,727.50.

BIDS FOR DREDGING AT TACOMA, WASH.

Bids for dredging and bulkheading at Tacoma Harbor, Wash., received by Maj. H. M. Chittenden, Corps of Engineers, U. S. Army, Seattle, Wash., and opened Sept. 2, were from the following firms: North American Dredging Co., San Francisco, Cal.; Puget Sound Bridge & Dredging Co., Seattle, Wash.; Richmond Dredging Co., San Francisco, Cal.; International Contract Co., Seattle, Wash.; Pacific Coast Dredging & Reclamation Co., San Francisco, Cal.; A. W. Tweeden & Co., Tacoma, Wash.

BIDS FOR DIKE WORK IN THE OHIO RIVER.

Bids for dike work and dam work at Brown's Island and Marietta Island, near head of Grand Chain, Ill., received by Col. William T. Rossell, Corps of Engineers, U. S. Army, Cincinnati, O., and opened Sept. 11, were as follows:

FOR DAM IN OHIO RIVER AT MARIETTA, O.

Knobloch & Shelton, Erie, Pa.	$53,204.60
John C. Thomas, Bellaire, O.	84,020.00

FOR DAM IN OHIO RIVER AT BROWN'S ISLAND.

Pennsylvania Contracting Co., Pittsburg, Pa.	$54,172.10

FOR DIKE IN OHIO RIVER AT GRAND CHAIN, ILL.

Oscar F. Barrett, Cincinnati, O.	$30,250.00

BIDS FOR DREDGING IN STAMFORD HARBOR, CONN.

Bids for dredging in Stamford Harbor, Conn., received by Maj. Harry Taylor, Corps of Engineers, U. S. Army, New London, Conn., opened Sept. 7, were as follows:

	Dredging 187,500 cu. yds.	Rock Removal 1,000 cu. yds.
Maritime Dredging Co.	23c	$10.00
Atlantic Dredging Co.	27 7/10c	8.80

BIDS FOR TUGBOAT FOR CANAL COMMISSION.

Bids were opened at the office of the Isthmian Canal Commission on Sept. 12, for furnishing one tugboat, as follows:

George Archer, 16 Beaver street, New York City, tug Julius C. Moran, $41,800, delivery New York, 3 days; tug E. G. Reynolds, $70,000, delivery Philadelphia, 10 days; tug Columbia, $60,000, delivery Baltimore, 5 days; tug Eugene F. Moran, $42,000, delivery New York, 3 days; tug Catherine Moran, $58,000, delivery New York 3 days.

Baker, Whitely Coal Co., 509 Keyser Building, Baltimore, Md., tug Columbia, $60,000, delivery Sparrows Point 5 days.

Samuel Holmes, 66 Broad street, New York City, tug No. 162-6 Eugene Moran, $42,000; tug No. 162-7 Julius Moran, $42,000; tug No. 188-4 Catherine Moran, $58,500; tug No. 152-7 Vigilant, $73,500; prompt delivery New York City.

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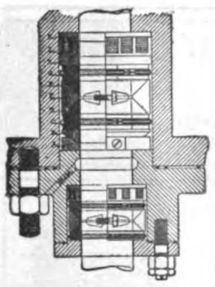

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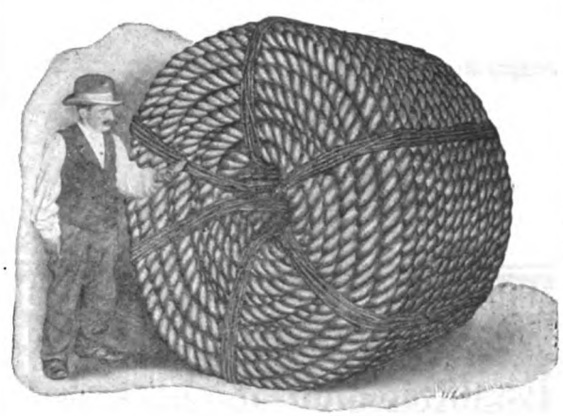

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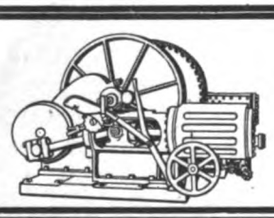
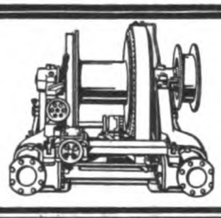
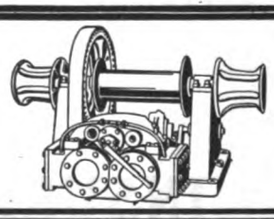

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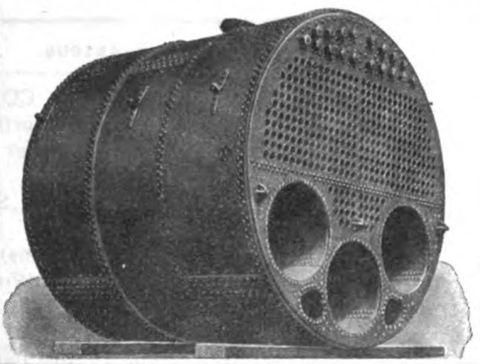

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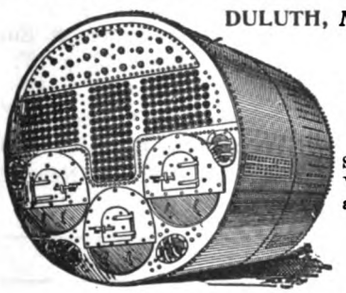

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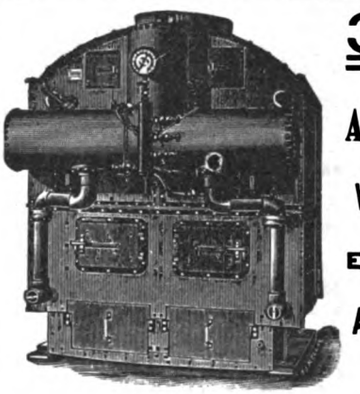

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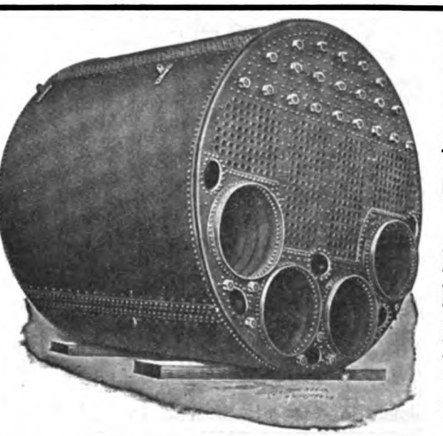

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